

THE MUSICAL EDUCATION PROGRAMS AND THEIR INFLUENCE OF THE MUSICAL PREDISPOSITIONS DEVELOPMENT AT PRESCHOOL AGE CHILDREN

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Abstract: *There is a common position among experts in this field that musical predispositions are the product of cumulative interactions between inherited dispositions and environmental factors favorable to them. However, there is not enough information about their aspect which is supposed to be able to provide a systemic effect on the development of the elementary musical predisposition on preschool level. Therefore, it was necessary to create a scientific review of the traditional approach to musical activity in the current program of the musical education and then to examine the possibilities of application of modern teaching concepts and methods of the stimulative program for the purpose of studying the possibility of their influence on the development of musical predisposition on preschool level. The survey was conducted using Gordon's Primary Measures of Music Audiation test. In a comparison of the results we have come to the following conclusions: A significant influence on the development of basic musical predisposition was achieved through the activities within the stimulative program of musical education, while activities of the current program of musical education did not show a sufficient effect on their development. The hypotheses that suggested a statistically significant difference in auditory and rhythmical discrimination among children who have been involved in the implementation of the two programs (stimulative and current) has been confirmed.*

Key words: *preschool age, musical education programs, elementary musical abilities (auditory and rhythmical).*

Introduction

There is a common position among experts in this field that musical predispositions are the product of cumulative interactions between inherited dispositions and environmental factors favorable to them. There is a common

position among experts in this field that musical predispositions are the product of cumulative interactions between inherited dispositions and environmental factors favorable to them. However, there is not enough information about their aspect which is supposed to be able to provide a systemic effect on the development of the elementary musical predisposition on preschool level.

Therefore, it was necessary to create a scientific review of the traditional approach to musical activity in the current program of the musical education, because the methodic approaches as well as the goals and the tasks of the program, are not in harmony with the cotemporary pedagogic theories about the subject position of the child in the educational process.

Applying the cotemporary pedagogic procedures in the stimulative program for the elementary abilities (auditory and rhythmical) development with many musical activities, is the subject of this research in order to see the aspects of the possible influence on development of the musical predispositions at preschool age.

The comparison of the efficiency of the stimulative program for musical predisposition development with the specific content of the musical activities and the current musical education program in different preschool institutions represents as well the subject of this research.

The stimulative musical predisposition development program starts with the cotemporary pedagogic attitudes in an educational process and is there by made for the needs of the research of the possible influence on the musical predisposition development. It had been compared to the current music education program in the preschool institutions, which had not been consolidated with the cotemporary acknowledgements as shown in the theory analysis.

By involving the active children working methods, engaging the individuality principles and influencing the whole children personality development, we come to the cotemporary pedagogic opinion, which demands the different approach in education, focusing the music predisposition development. The current musical education program, presented in the preschool institutions, shows the certain characteristics, as below:

- The passive learning of the song lyrics with its melodically-rhythmical characteristics, without the real musical task in order to back up the auditory and rhythmical predisposition development;
- The development of the children`s voice, the accurate diction and articulation, with limiting the activities to singing and listening;
- Learning the songs by choir singing;

- In playing activities, we use the Orff instruments with the indefinite tone height.

The stimulative musical predisposition development program differs from the current music education program, and is based on the contemporary pedagogic ideas, showing the characteristics below:

- Musical activities assume: breathing exercises as the prerequisite for the vocal cords development, singing, listening to music not only from the audio players, but the “live” concerts, too, elementary music teaching, visual and manual ability stimulation, as well as the music games, traditional dances;

- The stimulation of the auditory and rhythmical abilities is shown as a part of the typical musical tasks that are the part of the musical contents adjustable to children age;

- The respect and applying of the individual adequacy principles;

- Instrumental accompanying as the backup for the precise intonation and the audio and vocal development during the singing;

- Gradually making the tasks for encouraging the auditory and rhythmical development, more complexed;

- Active engaging the children’s attention by using the obvious utilities, correlating with the musical tasks realization, as a goal for the elementary musical predisposition development;

- Consolidation and correlation between the musical activities and the other fields in order to circle the child’s ability development

The starting theory basis

In a contemporary society, people insist on possibilities that are present, speaking about the musical activity of a child, that is, about his active dialogue with the music that surrounds it. Taking this into consideration, the quality of musical atmosphere at home and preschool institution has the important role, so the parent’s task as well as the teacher’s, is to embrace the musical needs of a child, by provoking and encouraging the development to the optimal level, by planning the right musical activities. They should be adequate for a child being able to participate in an adequate, current, developmental and musical level. Creating the optimal conditions for the musical development, leads to the optimal actualization of the potential itself, and also to the realization of the optimal musical performance (Grujic, 2017).

The child’s development is a process that acquires the succession of certain levels or phases through which a child goes from the birth until the relative maturity. The child’s ability to react on different musical impulses intensively, in early childhood, is a proof of the fact that the musical

development starts by birth, even earlier in prenatal period. Some researches show that the optimal learning period, that is, the phase of the best closeness to the musical impressions, is between 6th and 24th month, and then between the age of 5 and 6, so that extraordinary musical sensitivity should be used properly (Mirkovic-Rados, 1996).

If we analyze the musical development determinants today, we can see the interaction between the inherited and environmental aspect, which shows that the musicality is the result of the mutual interaction of the inheritance and the positive environmental factors (Gordon, 1997; Shutter – Dyson, 1999). In many researches, the authors analyzed the nature of the musicality (Pfleiderer, 1963; Hallam&Shaw, 2002; Hallam&Prince, 2003; Hallam, 2010), the influence of the genetic predispositions (Jarvela, 2014; Guerrini, 2005; Oikkonen et al., 2016), and the influence of the musically stimulative environment the family or the preschool institution (Flohr, 1981; Brand, 1986; Persellin, 2006; Runfola et al., 2012).

Nowadays, the psychologist K. Mirkovic-Rados thinks that the musical talent shows up and develops during the musical activity of the individual, surrounded by the positive environmental conditions. She presumes that the musically stimulative environment influences the early talent and the higher level of it, as well as the appearance of the certain musical abilities, such as the absolute pitch. According to this author, the musical development, as already been mentioned, depends on the “amount” of the potential, as well as the environmental stimulation and the quality of the abilities, the dominant at the child (Mirkovic-Rados, 1996).

Methodology

The research goals referred to the conceivability, adequacy and efficiency of the pedagogic ideas and their check, which are the basis of the stimulative program for elementary musical abilities development and the methodological activities for achieving this goal. It was important to reach the relevant data which could help the analysis of the cotemporary pedagogic theory attitudes and find their impact on the musical predisposition development.

The aim of the research was to enlighten the possibilities and the specific characteristics of the influence on the musical predisposition development at the preschool age, considered to be the „critical period “in this way. It was thought that this age was not the age to do a lot, speaking of the musical predisposition development, unless you satisfy the conditions that were to be defined and checked.

Considering the concrete and operationalized idea of the musical predispositions, the research tasks were provided, considering the questions below:

- What kind of individual differences can be seen among the children, speaking of the auditory discrimination, is it possible to develop the auditory discrimination at the preschool age?
- What kind of individual differences can be seen among the children, speaking of the rhythmical discrimination, is it possible to develop the rhythmical discrimination at the preschool age?

The hypothesis had been set based on the subject, the goal and the task of the research:

- There is an assumption that the statistically significant difference could be shown speaking of the auditory discrimination among the children at the preschool institution, being exposed to the activities of the stimulative musical education program and the current musical education program.

There is an assumption that the statistically significant difference could be shown speaking of the rhythmical discrimination among the children at the preschool institution, being exposed to the activities of the stimulative musical education program and the current musical education program.

Applying the descriptive method in order to describe the actual appearances, the interpretation of the given results and getting the conclusions, seemed to be the need in resolving the problems of this research, as well as the theoretical analysis of the views, attitudes and the results of the researches.

The causable method was used in order to find the relation between the cause and the consequent between the factor influence and the elementary musical abilities of the preschool age children by using the ex-post-facto procedure. The statistical procedure was used in order to determinate the size of the researched appearances as well as their mutual relation.

The research technique for appraising the auditory and rhythmical predispositions used as the research technique in this publication, was the elementary musical abilities test by E. Gordon (Gordon, 1986), as the appraisal of the auditory and rhythmical predispositions.

The samples were the children of preschool groups in one preschool institution. The children were divided into experimental and the controlled group. The stimulative musical education program activities were in the experimental group, and the current musical education activities were in the controlled group. Both groups had the equal number of children (50).

The test-retest procedure used for this research on the experimental and the controlled group had the aim of checking the performance of the current and the stimulative program of the musical education speaking of the musical predisposition development. The time between the test and the retest was a year.

The children from both groups (controlled and experimental) were tested the same day by Gordon's test. The sample of 100 children was divided into five groups in which were by twenty children. They were sorted by alphabetical order. Considering the time of testing (45 minutes), the pauses between the groups were one hour. The test has the tone and the rhythmical part with the practice examples, and then the forty tasks. In order to accomplish the activities of the test, the child does not need to write or read.

Each task is being reproduced on the CD by naming the certain subject (for example the cup, an apple, the doll...), and the same subject is presented on the answer list above the certain task. After listening a pair of phrases in each of the tasks, in tone, and then the rhythmical part, a child has to defer weather the phrases are the same or different and to circle them on the answer list as the pair of the same or the different faces if it considers the phrases are different(Rados,1996).

The research results

The next tasks were presumed by this research:

- What kind of individual differences among the children can be shown, speaking of the auditory discrimination, and can it be developed at the preschool age?
- What kind of individual differences among the children can be shown, speaking of the rhythmical discrimination, and can it be developed at the preschool age?

The hypothesis of the research has been set and it reads:

There is an assumption that the statistically significant difference will be shown speaking of the auditory and rhythmic discrimination among the children at the preschool institution, being exposed to the activities of the stimulative musical education program(experimental group) and the current musical education program(controlled group).

After the Gordon's test, the appraising of the auditory and rhythmical abilities, among the predictable population, by using Z- statistics, we got the results of the advancing differences, considering the auditory and rhythmical discrimination:

Chart 01 – Gordon's test- the results of the advancing differences, considering the auditory and rhythmical discrimination (tone and rhythmic subscale) between the experimental and the controlled group (shown in percentile ranges).

1. Gordon's test-differences in auditory and rhythmical discrimination	Experimental		Controlled		rek	Difference		
	ME	σM	MK	σK		(ME-MK)	$\sigma D M$	Z
Initial status	31,204	1,844	32,02	2,392	-0,017	-0,816	3,019	-0,27
Final status	83,938	1,478	42,183	2,598	0,006	41,755	2,989	13,969
Progress M2-M1	52,734	2,011	10,163	4,426	0,075	42,571	4,676	9,104
Z	26,215		2,295			9,104		

The groups E and K have a small variance of the average value that at the initial test, but the value for Z from $-0,27$ for that variance so small that that cannot be significant at the level of 0.05, that is

$$Z = -0,27 < Z_{0,01} = 2,33$$

So, we can conclude that the both groups can be considered as not different, but cannot say that they were the same. There can be a little or not at all doubt, that the both populations, from which the samples were, differ in a way of the average accomplishment in the final experiment check. The value for Z is 13,969, which is significantly above the level 0,01 in a one way test (Z is from 2,33), that is

$$Z = 13,969 > Z_{0,01} = 2,33$$

The difference between the final ME-MK and the conclusion based on her seems definite enough, and the fact that the group E showed the statistically significant progression in criteria test connected to the group K.

The average progression at the group E is 52,734, and at the group K is 10,163. When we take under consideration the small correlation $rek = 0,075$ and calculate the standard error in the progress, we find the Z from 9,104 which represents the test of difference in the progress of these two samples which is satisfactory as in case of the final status, so the difference is significant above the level of 0,01, that is

$$Z = 9,104 > Z_{0,01} = 2,33$$

Based on the results we can conclude that there are statistically significant differences in progressing between the experimental and the controlled group at the Gordon's test speaking of the auditory and rhythmic discrimination on behalf of applying the stimulative musical education program.

Gordon's test- differences in the auditory discrimination

After the Gordon's test, the appraising of the auditory abilities part, among the predictable population, by using Z- statistics, we got the results of the advancing differences, considering the auditory discrimination.

Chart 02- Gordon's test-the results of the advancing differences, considering the auditory discrimination (tone subscale) between the experimental and the controlled group (shown in percentile ranges).

1. Gordon's test-differences in auditory discrimination	Experimental		Controlled		rek	Difference		
	ME	σM	MK	σK		(ME-MK)	σD M	Z
Initial status	28,897	2,709	30,428	2,913	0,15	-1,53	3,932	-0,389
Final status	78,020	2,539	37,653	2,973	-0,02	40,367	3,909	10,325
Progress M2-M1	49,122	2,76	7,224	0,427	-0,038	41,897	2,847	14,714
Z	17,793		16,886			14,715		

At the beginning, the groups E and K have a small variance of the average value that at the initial test, but the value for Z from for that - 0,389 variance so small that that cannot be significant at the level of 0.05, that is

$$Z = -0,389 < Z_{0,01} = 2,33$$

So, we can conclude that the both groups can be considered as not different at the start, but cannot say that they were the same. There can be a little or not at all doubt, that the both populations, from which the samples were, differ in a way of the average accomplishment in the final experiment check.

The value of Z is 10,325, which is significantly above the level 0,01 in a one way test (Z from 2,33), that is

$$Z=10,325 > Z_{0,01}=2,33$$

The difference between the final ME-MK and the conclusion based on her seem final enough, and the fact that the group E showed statistically significant progress in the criteria test connected to the group K.

The average progression at the group E is 49,122, and at the group K is 7, 224. When we take under consideration the small correlation $r_{EK} = -0,038$ and calculate the standard error in the progress, we find the Z from 14,715 which represents the test of difference in the progress of these two samples which is satisfactory as in case of the final status, so the difference is significant above the level of 0,01, that is

$$Z=14,715 > Z_{0,01}=2,33$$

Based on the results we can conclude that there are statistically significant differences in progress between the experimental and the controlled group at the Gordon's test speaking of the auditory discrimination on behalf of applying the stimulative musical education program.

Gordon's test- differences in the rhythmic discrimination

After the Gordon's test, the appraising of the rhythmical abilities part, among the predictable population, by using Z- statistics, we got the results of the advancing differences, considering the auditory discrimination.

Chart 03- Gordon's test-the results of the advancing differences, considering the rhythmical discrimination (rhythmic subscale) between the experimental and the controlled group (shown in percentile ranges).

1. Gordon's test-differences in rhythmical discrimination	Experimental		Controlled		rek	Difference		
	ME	σM	MK	σK		(ME-MK)	$\sigma D M$	Z
Initial status	45,14 2	3,32 7	46,65 3	2,39 2	0,10 4	-1,510 5	4,07 5	-0,37
Final status	81,0	2,31 6	54,81 6	2,59 8	- 0,16 8	26,18 3	3,48 1	7,52 1
Progress M2-M1	35,85 7	3,09 8	8,163	6,41 0	0,24	27,69 3	6,20 6	4,46 1
Z	11,571		1,773			4,461		

At the beginning, the groups E and K have a small variance of the average value that at the initial test, but the value for Z from for that – 0,37 variance so small that that cannot be significant at the level of 0.05, that is

$$Z = -0,37 < Z_{0,01} = 2,33$$

So, we can conclude that the both groups can be considered as not different at the start, but cannot say that they were the same. There can be a little or not at all doubt, that the both populations, from which the samples were, differ in a way of the average accomplishment in the final experiment check. The value of Z is 7, 521, which is significantly above the level 0, 01 in a one way test (Z from 2, 33), that is

$$Z = 7,521 > Z_{0,01} = 2,33$$

The difference between the final ME-MK and the conclusion based on her seem final enough, and the fact that the group E showed statistically significant progress in the criteria test connected to the group K.

The average progression at the group E is 35, 857, and at the group K is 8, 163. When we take under consideration the small correlation $r_{EK} = 0, 24$ and calculate the standard error in the progress, we find the Z from 4, 461 which represents the test of difference in the progress of these two samples which is satisfactory as in case of the final status, so the difference is significant above the level of 0,01, that is

$$Z = 4,461 > Z_{0,01} = 2,33$$

Based on the results we can conclude that there are statistically significant differences in progress between the experimental and the controlled group at the Gordon's test speaking of the rhythmical discrimination on behalf of applying the stimulative musical education program.

Based on the results, it can also be concluded that the predicted hypothesis can be accepted, and it is:

Speaking of the auditory and rhythmical discrimination among the children that participated in the activities of the stimulative musical education program (experimental group) and the current musical education program in the preschool institution, we can presume the appearance of the statistically significant difference. There has been a significant progress in the group of children attending the activities of the stimulative musical education program for musical predisposition development, with regard to the children attending the activities of a current musical education program, speaking of the auditory and rhythmical discrimination, engaged by using the adequate programs and tests from this research.

Discussion

After being exposed to the activities of two different programs, there had been an success analysis speaking of the auditory and rhythmical discrimination at the initial Gordon's test done on the whole sample. The results were:

At the beginning, the groups E and K have a small variance of the average value that at the initial test, but the value for Z from for that $-0,389$ variance so small that that cannot be significant at the level of 0.05, that is $Z = -0,389 < 3 \cdot 0,01 = 2,33$

Based on these results, we can see that the scores between the results at the initial testing for both groups with Gordon's test, the difference is almost insignificant and can be totally statistically negligible. If we analyze the results, we can conclude that before implementing the activities of the current and stimulative musical program, the children were almost equal considering the level of musical abilities development.

Retesting the whole sample by Gordon's test, we had the result:

The average progress in the group E is 49,122, and the group K is 7,224. The average progression at the group E is 52,734, and at the group K is 10,163. When we take under consideration the small correlation $r_{EK} = -0,038$ and calculate the standard error in the progress, we find the Z from 14, 715 which represents the test of difference in the progress of these two samples which is satisfactory as in case of the final status, so the difference is significant above the level of 0,01, that is $Z = 14,715 > 3 \cdot 0,01 = 2,33$.

Based on the results, we can conclude that there are statistically significant differences in progress between the experimental and the controlled group at the Gordon's test speaking of the rhythmical and auditory discrimination on behalf of applying the stimulative musical education program.

Retesting the whole sample by Gordon's test, we had the result:

Taking the significant experimental group's results, connected to the auditory and rhythmical discrimination development, we can say that the progress is directly connected to the children's participation in aims, tasks and the content of the stimulative musical education program. The benefits of the program show that:

- The stimulation of the elementary musical predispositions development, especially the auditory and rhythmical, can be seen in the diversity of the general goals that influenced the accomplishments;
- The stimulation of the auditory and rhythmical abilities depends on quality of the musical content, which affected, as well as the correlated tasks with the age of the children, the children's accomplishment in this way;
- The possibility of individual engagement in musical activities, enables the systematicly and congruously tracking their development in this field;

- Applying the valid tests for tracking and appraising the children's development, gives the continuum and the possibility of seeing the real results of the children's musical development;
- By the continuum of everyday activities with singing, instruments, one stimulates the auditory predispositions development within the preschool age children;
- The continuum of everyday Orff's instruments usage advanced the progress of rhythmical predispositions and great accomplishments of the experimental group.

The average progress in the group E is 49,122, and the group K is 7,224. The average progression at the group E is 52,734, and at the group K is 10,163. When we take under consideration the small correlation $r_{ek} = -0,038$ and calculate the standard error in the progress, we find the Z from 14,715 which represents the test of difference in the progress of these two samples which is satisfactory as in case of the final status, so the difference is significant above the level of 0,01, that is $Z = 14,715 > 3,01 = 2,33$.

Analyzing individually the height discrimination in the experimental and controlled group's results, we can conclude that the singing, as a part of the stimulative musical program with its goals, tasks, definitely affected the shown accomplishments in a certain way:

We can conclude that the stimulation of the precise intonation was indeed better when being stimulated by everyday singing with the melodic instrument (piano, accordion), and that exactly that kind of support actually stimulated the more precisely singing.

We can conclude, that the children's individual singing stimulation, with gradually implementation of the groups and a choir, also improved the preciseness in conservation of melody.

The conclusions of the teachers in musical activities are analogue to our research and show that the children who learn the certain song without the individual stimulation, mostly do the rhythm precisely as well as the song lyrics, but the melody is not precise in intonation, because of the fact that the children with the instable intonation "interfere" with the precise reproduction among connected to the children whose ability of precise intonation has been more developed.

We can conclude that the tasks of the discrimination in tone height, are supported by the children's experience connected to the high-low relations (visually-environmental), presented in the experimental group, are also responsible for the accomplishments of the auditory discrimination in this group.

Analyzing this and the similar researches, we can presume that the explanation of the high-low relation and his applying and significance in music, is a very important because it makes it easy to children verbally

express themselves during the determination of a height discrimination, that is, the children's focus is on differing the auditory and not verbally expressing. This shows the reason for high results in height discrimination in retesting the experimental group.

The results, addressing the rhythmical discrimination that show the average progress, in the group E are 35,857, and the group K are 8,163, so when we consider the small correlation $r_{EK}=0,24$ and calculate the standard error in progress, we find Z from 4,461 which represents the difference test in progress of these two samples, which is also satisfactory as well as the final status, we get the significant difference above the level 0,01, that is $Z=4,461 > Z_{0,01}=2,33$.

Analyzing the rhythmical discrimination individually in the results of the experimental and controlled group, we can conclude that almost each and every part of the stimulative musical program with its goals and tasks, as well the proper content, very much influenced the shown accomplishments of the experimental group in a way:

- Continuum is secured by repetition of rhymes accompanied by the rhythmical Orff's instruments;
- It was insisted on rhythmical Orff's instruments usage as the backup of the singing activities, and rhythmical tasks in each song;
- Applying the innovative methodical aspects, considering the realization of the preciseness of the rhythmical tasks;
- Applying the activities that secure the exact performing of the rhythmical models and their correlation with the given tempo;
- The adoption of the two-part and three-part has been achieved throughout the rhymes and musical games;
- The adequate musical activities have been realized in order to form and keep the continuous rhythmical pulsation.

The current musical program seems to be responsible for the controlled group's result in retesting by Gordon's test, which shows a certain improvement, but not statistically significant, and this program does not have enough stimulative component considering the ones in the experimental group. Even though the differences between the initial and retesting the controlled group are not statistically significant, they do exist, so in the current musical program one can talk about the importance of children's musical stimulation at the preschool institutions, considering the difference between them and children without the contact to music.

Based on everything already being said, we could state the hypothesis confirmed, so we could conclude that the auditory and rhythmical progress depends, not only on exposure to different musical programs, but also on quality of the goals, tasks and the content of musical programs.

Conclusion

The results, their analysis and the discussion, secured the conclusions based on which was possible to judge the adequacy of the hypotheses from this research, as well as the basic stating points. The criteria for its legitimate prevailing, is the level of the accomplished goals and tasks during the research.

Analyzing the results of the musical programs, we can conclude that the current musical education program does not stimulate enough the auditory and rhythmical predisposition development. We can, also conclude that the stimulative musical education program, leaning to the cotemporary pedagogical postulates, has the influence of creating and developing the elementary musical predispositions (auditory and rhythmical), as confirmed in this research. Based on this, there is an opinion that the concept of the stimulative musical program, with all its components, is extremely significant in stimulating the auditory and rhythmical abilities at the preschool age children, and the hypothesis is confirmed with all the research results.

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