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The vocal competence of children and youth – diagnostic research

ABSTRACT: There is a prevailing conviction that Poles cannot sing. The custom of singing has died out in families, and it is even waning in music lessons in school. There is a general perception that singing skills are conditioned by the possession of special musical abilities and that not everyone can master them.

This article presents the results of my diagnostic research carried out at the end of the 1980s and reprised by other scholars in recent years. Because the same research method and procedures were used in all this research, it is possible to compare the results and observe any changes in the level of singing skills over the space of around twenty years.

The research signals an alarming situation in respect to such an important musical competence as singing. After the twenty years that have passed since the first research, we observe a decline in the ability to sing among children and youngsters.

KEYWORDS: vocal competence, diagnostic research on singing, vocal development, assessment of singing, scale of vocal competence

*A more profound musical education has
always developed where its foundation has
been singing ...¹*

Singing is one of the fundamental aspects of a person's musical development. But why singing? The special role of singing should be highlighted for at least three reasons. Firstly, singing as a form of musical activity enables a person to imitate a voice already from infancy, underpinning the development of inner hearing. So it is the prime stimulus to the forming of musical perceptual skills. Secondly, singing is the most natural form of musical enculturation. As a musical skill, it is not just a means, but also a goal of the development of a person's musical and overall culture. In many cultures, from antiquity onwards, the skills of

¹ Zoltán Kodály, 'Singing Youth', *Visszatekintés* 1 (1941), 117.

singing and playing have been considered an inseparable part of general education. The minds behind contemporary concepts of general musical education also regard singing as an essential form of training, and Zoltán Kodály made singing the bedrock of his concept of musical education. He stated that the human voice, a 'musical instrument' accessible to everyone, made it possible for a person to enter into contact with the greatest musical masterpieces and to participate in active musical life. Hungarians, trained in accordance with that concept, are held to be among the most musical of nations. Thirdly, singing – and ensemble singing in particular – has other, extra-musical qualities which in our times take on special significance. Suffice it to mention its therapeutic, recreational and educational qualities and its role in overall development.

There is a prevailing conviction that Poles cannot sing, that they sing little and reluctantly and cannot remember the words to songs, and that the tunes they sing are difficult to recognise. For some, singing is a source of embarrassment. The custom of singing has died out in families, and it is even waning in music lessons in school. Increasingly often, teachers have a poor command of their own voice and teach children to sing by means of recordings. There is a general perception that singing skills are conditioned by the possession of special musical abilities and that not everyone can master them.

Such opinions regarding singing induced me to undertake research aimed at finding answers to two questions. 1) What is the level of vocal competence among children and youngsters? 2) To what extent can individual differences in the level of vocal competence be attributed to the possession of early experience in singing (environmental influences, mainly within the family), and to what extent can they be linked to the level of musical abilities measured by ability tests?²

Specialist diagnostic research carried out in Poland into the level of musical education, including the research led by Professor Andrzej Rakowski, has generally overlooked this aspect of musical skills or marginalised it, mainly due to the burdensome nature of the research and evaluation. And so it would seem most useful to present here the results of my diagnostic research carried out at the end of the 1980s and reprised by other scholars in recent years. Because the same research method and procedures were used in all this research, it is possible to compare the results and observe any changes in the level of singing skills over the space of around twenty years.

² I would refer anyone interested in the results of these tests to the book Barbara Kamińska, *Kompetencje wokalne dzieci i młodzieży. Ich poziom, rozwój i uwarunkowania* [The vocal competence of children and youngsters. Their level, development and conditioning] (Warszawa, 1997).

Vocal competence and its assessment

Let us begin by defining the notion of vocal competence. Vocal competence is defined in every culture in a way that is peculiar to the specific character of the music, performance tradition and social function of singing within that culture. It may be assumed that these are skills and aptitudes connected with one's own voice as a musical instrument employed for musical expression, improvisation or the reproduction of musical structures (Kamińska, 1997, 109). Correct singing consists of precise intonation and rhythm and appropriate breathing and phrasing. In our culture, dominated by tonal music based on the twelve-note system, with strictly defined tonal relations, vocal competence is associated first and foremost with the ability to accurately reproduce a melody in terms of pitch and rhythm.

However, singing is a complex behaviour, subject to development over the course of ontogenesis and conditioned by environmental factors. Hence, when investigating singing, a number of issues should be taken into account, such as the stage in musical development and the age of the participants in the research, the kind of tasks and the participants' familiarity with the musical material, and also the research conditions. A specific execution may be regarded in one case as a regularity of development and in another as indicative of tardy development. For example, we evaluate the singing of the contour of a melody differently in the case of a five-year-old and an eight-year-old.

Other issues concern the kinds of tasks that are set; for example, is the participant to repeat aloud a melody played on the piano or are we assessing the ability to sing a familiar song unaccompanied. The latter method seems better suited to the assessment of vocal competence. A song usually forms a certain musical whole, and a correct rendition indicates not only the ability to imitate, but above all an understanding of tonal relations, the ability to conceive of the course of a melodic line and the skill of reproducing it from memory.

There is another group of issues connected with the conditions of the research. Are these to be individual tests, in small groups, or a whole class together? Are they recorded or assessed 'live'? Is it possible to verify assessments?

The last problem, of fundamental importance, concerns the methods and criteria for assessing the accuracy of singing. At present, two kinds of method are employed for evaluating singing: assessment made by people (competent arbiters) employing fixed criteria ('human-based' assessment) and assessment employing measuring devices ('machine-based'). The choice of assessment method is determined primarily by the character and aim of the research. In our research, it was most justified for correct singing to be assessed by a group of competent arbiters by means of a 'graded scale of vocal competence'.

The graded scale of vocal competence

The diagnosis of levels of vocal competence requires the elaboration of precise criteria for the assessment of singing. Since my research was intended to enable the simultaneous assessment of the level of vocal skills in both children and youngsters, I undertook to produce an original graded scale of vocal competence. This scale was based on a study of the literature relating to the development of vocal skills and also my own empirical material, comprising 890 recordings of two songs performed by 445 children of various ages.

The scale enables us to produce a quantitative assessment (0 – 5 points) and also to diagnose the stage in the development of vocal skills in the participants. Because the scale is designed to measure and assess vocal competence from the age of six, as the lower limit I set the singing of the contour of a melody. This skill is given one point. Lower levels of vocal competence are assessed as zero. The whole scale of the assessment of vocal competence is given below:

- 0 points - monodeclamation, a self-devised melody or numerous changes to the contour of a melody, rendering it unrecognisable.
- 1 point - singing the contour of a melody. The melody can only be drawn, but not written on a stave.
- 2 points - the phrases of a song are tonally quite coherent, but they are not joined tonally into a single whole. The singer often changes key between phrases.
- 3 points - the rendition constitutes a certain tonal whole, which indicates a developed sense of tone, but many intervals are sung imprecisely.
- 4 points - singing essentially in a single key, with intervals sung correctly, but occasional slips that may lead to the raising or lowering of the key.
- 5 points - correct rendition, adhering to a single key, with the intervals sung correctly.

The reliability of the scale was evaluated by means of a measurement of consensuality. Consensuality was measured by correlating assessments of the singing of sixty-three individuals recorded on magnetic tape made independently by two competent arbiters. A Tau-Kendall correlation factor of 0.62, although not high, attests the concurrence of the assessments and was deemed satisfactory for research of this type.

My own research

During the school year 1987/88, I carried out research on 445 children and youngsters in five age groups (6, 9, 11, 14 and 17 years old) in seven schools. Before the tests began, all the participants learned the song

‘Panie Janie’.³ When the teacher and the pupils decided that they could sing the song properly, we set about recording every child’s singing on tape. Subsequently, each rendition was assessed by at least two competent judges, according to the scale described above.

The group as a whole received an average grade of 2.78 points out of a maximum of 5 on the scale of vocal competence. This assessment indicates a low level of vocal competence, and such singing is characterised by an unstable tonality and the imprecise singing of intervals. Assuming that a high level of vocal competence is represented by those participants who achieved a grade of 4 or 5 points, we stated that only thirty per cent of those assessed attained that level, whilst the remaining seventy per cent represented a low level of vocal competence (grades of 0, 1, 2 and 3 points).

The distribution of the results over the age groups is displayed in Table 1. This shows that barely around eight per cent of six-year-olds could sing correctly. Vocal competence develops up to maturity. The most intense increase is observed up to the ninth year (in Poland, year three of primary school). After that, there is a somewhat slower improvement up to the eleventh year (year five of primary school). During adolescence, the quality of singing deteriorates, before slowly returning to the level previously attained. When we analyse the average grades achieved in singing, we note statistically significant differences between the age groups.

Points obtained	Age				
	6	9	11	14	17
5-4	8.4	29.6	39.2	19.3	32.9
3-2-1	77.2	70.3	60.9	79.0	67.0
0	12.3	0.0	0.0	1.8	0.0

Table 1. Percentage grades in singing according to age group. Kamińska tests.

It might seem interesting to compare these results with previously published research into the vocal competence of Japanese children (Norioka, 1994).⁴ The grading scale employed in this research enables analogous groups of children singing correctly and incorrectly to be distinguished for both the Polish and the Japanese research. The proportions of children singing correctly in Poland and Japan are converse. In Poland, most children (seventy

³ Pronounced ‘Pan-yeh Jan-yeh’. Literally ‘Mister John’; sung to the tune of ‘Frère Jacques’ (tr.).

⁴ Yoshiko Norioka, ‘A Survey of Japanese School Aged Poor Pitch Singers’, in *Onchi and Singing Development. A cross-cultural perspective*, eds. Graham Welch and Tadahiro Murao (London, 1994), 49-62.

per cent) obtained a low singing grade; in Japan, most (seventy per cent) sang correctly. The Japanese children acquired the ability to sing correctly in their early childhood, and so by the age of six there were already huge differences in this respect between the Polish and the Japanese children.

We also noted a different dynamic to the development of singing. Japanese children achieve a quite high level of vocal competence by the age of five, and that level does not alter until their ninth year; the singing of Polish children during that period, meanwhile, develops intensively. Also interesting is the fact that during the period of adolescence, when the voice is mutating, the quality of singing deteriorates in Polish children, especially among boys, whilst in Japanese children the level of singing continues to rise. In their fourteenth year, eighty-four per cent of Japanese boys have passed through mutation and the voices of fifteen per cent are still changing. Following this period (between the twelfth and fourteenth years) and a temporary deterioration in the quality of singing, these boys sing better than before mutation. After mutation, seventy-five per cent of boys sing correctly, whilst before mutation sixty-six per cent of boys sing correctly. And so Japanese boys improve their intonation after mutation more quickly than Polish boys.

Independently of the research into the level of singing skills, the same group also had their perceptual musical abilities measured by means of the test devised by A. Bentley (Bentley Measures of Musical Ability). The results of these tests were correlated with the grades from singing, which gave us information about the strength of the link between musical ability and correct intonation in singing. We wished to verify in this way the accuracy of the common opinion that only people 'with musical abilities' can sing correctly. Although we did note a significant correlation between the results of the perceptual test and the grades from singing in all age groups together, the low correlation factor for the results in the whole test (Tau-Kendall 0.348, $p=0.00005$) points to only a small relationship between musical abilities measured by this test and the level of correct intonation in singing. When we compare the average test results in groups with correct and incorrect intonation, it turns out that the differences are statistically significant among 9-, 11- and 17-year-olds (t-Student respectively 4.37; 5.76; 3.34; $p=0.000$). No differences were noted in the group of 6-year-olds, and in the group of 14-year-olds $t=2.02$ is close to insignificant.

Much more interesting conclusions arise from analysis of the distribution of these results. Although the average results in the test of musical abilities differ in the outermost groups in terms of correctness of singing, one also notes a huge span of individual differences in the level of those abilities in children singing well and poorly. There were cases where children with poor intonation obtained test results above the average for good singers, and vice versa – some good singers obtained results below the average for poor singers.

The research of other scholars

In recent years, a 'scale of vocal competence' has been applied in the research of other scholars. In 2006/7, Agnieszka Weiner studied year three primary school pupils; and in 2008/9, Anna Stankiewicz studied year three gymnasium school pupils.⁵ The use of the same procedure and the same scale for grading singing allows one to assume that the results are comparable, despite limitations resulting from the selection of the groups of participants. Thanks to such comparative research, we can state whether the level of singing ability among children and youngsters has changed over the twenty years that have passed since my own research. During that period, the system of education has altered (gymnasium schools were introduced) and the curriculum and the situation of music in schools have also changed. Have those changes brought an improvement or a deterioration in the quality of pupils' singing?

The research carried out by Weiner and Stankiewicz provides us with data on two age groups. These are 'strategic' groups in respect to the stage in young people's musical education. The year three primary school pupils are completing the stage of elementary learning. This period in life is crucial to musical development, and it is important by whom and how music is taught. Authorities in the domain of music and musical education attached to the Polish Music Council (PRM) are making great efforts to ensure that elementary classes be taught by a music specialist and that the teachers of elementary classes be suitably prepared for giving music lessons. Meanwhile, the results of research into the correctness of singing in gymnasium classes gives us some insight into the level of singing represented by pupils completing their musical education in Polish state schools, since musical education ends in gymnasium-level schools.

Dr Weiner studied 176 pupils of 11 third-year classes from five primary schools in Lublin and Świdnik. The children were recorded individually. They sang two songs: 'Panie Janie' and a song of their own choosing. Each child was assessed independently by two competent arbiters. The assessments of the pupils, which Dr Weiner made available to me, can be calculated in such a way as to be comparable with the results obtained in my earlier research. In the table below, in the Weiner research, I give the results of each arbiter separately.

⁵ Agnieszka Weiner, *Kompetencje muzyczne dzieci w młodszy wieku szkolnym* [The musical competence of younger school-age children] (Lublin, 2010); Anna Stankiewicz, *Poziom rozwoju muzycznego adolescentów w kontekście uwarunkowań środowiskowych* [The level of musical development of adolescents in the context of environmental conditions], UMFC, Ph.D. thesis in progress.

Research	N	M	SD	0 points	1+2+3 points	4+5 points
Kamińska	115	2.79	1.174	0%	70.3%	29.6%
Weiner I	176	2.37	0.961	4.5%	84.6%	10.8%
Weiner II	176	2.23	1.27	5.7%	80.7%	13.6%

Table 2. Assessments of the singing of nine-year-olds in the research of Kamińska and Weiner (the song 'Panie Janie').

The children in Weiner's research achieved lower grades for singing from both judges than the children in my research. The differences between the average grades in the two sets of research (arbitrator I $t = 3.34$, arbitrator II $t = 3.79$) are statistically significant ($p = 0.001$). This confirms the opinion that the level of vocal competence among year three primary school pupils has fallen over the last twenty years.

Anna Stankiewicz studied 175 pupils of 10 gymnasium schools in the Podlasie region. Podlasie is one of the 'most songful' regions in Poland – a multi-cultural and multi-national region. There, singing is one of the ways in which people identify with their culture, nationality and religion. A large percentage of the population of Podlasie is of the Orthodox faith and, as we know, singing is an important element in the Orthodox rite. Consequently, we were aware that children in Podlasie might achieve relatively high grades for singing, which might not be very representative of gymnasium level schooling in Poland as a whole. Table 3 juxtaposes the assessments from my research and that conducted by Anna Stankiewicz.

Research	N	M	SD	0 points	1+2+3 points	4+5 points
Kamińska	57	2.42	1.034	1.8%	79%	19.3%
Stankiewicz	175	2.31	1.7	18.9%	52.9%	28.6%

Table 3. Assessments of the singing of adolescents in the research of Kamińska and Stankiewicz (the song 'Panie Janie').

Contrary to our expectations, the results of youngsters from Podlasie are low, close to those attained in my own research. The difference between the average grades is not statistically significant ($t = 0.46$, n.i.). Drawing on the description from the scale, the singing of a senior gymnasium school pupil is characterised by tonal instability and a tendency to change key between the phrases of a song. Large differences can be observed, meanwhile, in the distribution of the grades. Whilst in my research barely twenty per cent of the participants sang correctly, in Stankiewicz's research almost thirty per cent of

pupils sang correctly. In my opinion, the fact that a relatively greater number of pupils still sing correctly compared to other regions may well be due to the singing traditions in this region. What is alarming is the percentage of participants (nineteen per cent) who received 0 points. This grade indicates a lack of vocal skills, an inability to sing a melody in such a way that the melodic line be recognisable. This group is defined as 'monotonic'. According to research carried out by music psychologists, at most four per cent of the population is monotonic. Whence such a discrepancy? Everything points to a lack of experience in singing, to educational neglect, and to cultural changes, beginning with music-making in the family. There is a growing number of families that have ceased to sing, and children sing increasingly rarely in lessons. Stankiewicz noted a large difference between the average grades for singing between particular schools. There are schools in which the average is as low as 1 point and classes that sing almost 'correctly' (average grade = 3.53).

The research conducted by us, even if not representative of all Polish schoolchildren, signals an alarming situation in respect to such an important musical competence as singing. After the twenty years that have passed since my research, we observe a decline in the ability to sing among children and youngsters. This is a paradoxical situation, since from other research⁶ we know that pupils' greatest musical dream is... to be able to sing beautifully.

Translated by John Comber

⁶ Barbara Kamińska, 'Miejsce muzyki w życiu młodzieży' [The place of music in the lives of youngsters], in *Psychologiczne podstawy kształcenia muzycznego*, eds. Maria Manturzevska and Małgorzata Chmurzyńska [The psychological foundations for musical training] (Warszawa, 1999), 63–84.