Acta Educationis Generalis
Volume 13, 2023, Issue 2

DOI: 10.2478/atd-2023-0012

The Role of Music Education in Childhood

Tímea Szűcs - Erika Juhász*

Received: February 19, 2023; received in revised form: April 23, 2023;
accepted: April 24, 2023

Abstract:
Introduction: From the second half of the 20th century onwards, studies on the transfer effects of music learning have become increasingly common. Both in the domestic and international literature, we can read research with a solid scientific background that supports the transfer effects of music education on different aspects of life.
Purpose: The aim of paper was to map the effect of learning music in childhood based on both the international and the Hungarian scientific literature.
Methods: When analyzing the social impact of learning music in detail we distinguished five areas: 1. state of physical development, skillfulness, health; 2. cognitive skills; 3. personal development and emotional intelligence; 4. the role of compensating for deficit; 5. community building. In this study we present in detail the results of research studies in these fields.
Conclusions: In our opinion music education institutions transmit several values and hidden curriculum to children the effect of which serves as a determining and formative factor throughout their whole lives. That is why it is important that, based on the research findings, teachers should be aware of it and consciously control it. In our view learning music can act as a supporting factor for the physical, spiritual and mental development of the children and apart from improving different areas of competence it can also influence their attitude to work.

Key words: elementary art school, music education, learning music, transfer effect, social importance.

* Tímea Szűcs, University of Debrecen, Department of Educational, Institute of Educational Sciencies and Cultural Management, Debrecen, Hungary; szucstimea77@gmail.com
Erika Juhász, University of Debrecen, Faculty of Humanities, Institute of Educational Sciencies and Cultural Management, Debrecen, Hungary; juhasz.erika@arts.unideb.hu

Introduction

Abundant material on the positive effect of learning music can be found in the Hungarian and international scientific literature. The transfer effects of learning music mean not only the development of musical skills of a child, but above this, pupils can acquire skills that can promote their academic performance.

In Hungary young children have access to music skills development from a very young age: although not in an institutional way, but there is babymusic.[1] In kindergartens (ISCED 0) professional teachers lead the musical training of children, which is a unique phenomenon internationally. Children learn nursery rhymes and songs while making simple movements and playing games. Kindergarten teachers singing well with well grounded knowledge of music utilize not only the scheduled music education occasions, but they take advantage of singing spontaneously with their groups. Music education is extremely important in childhood, because the concepts of the Kodály method can prevail the most at this level of education (Szűcs & Héjja, 2017).

At every level of education beyond their role of transmitting culture and civilization, music and singing lessons mean scenes for creativity, games, relaxation, recharging and gaining experiences. Music lessons led by a good teacher mean the feeling of a sense of achievement and recharging for the children, which can help them perform better in the lessons of other subjects. It is important to strengthen these functions so that not only the music profession should know the positive impact of singing and playing music, but non-professionals and leaders of the education system as well to avoid depriving groups of pupils from the opportunity of music and singing lessons.

1 Range of the effect of learning music

Regardless of different historical eras and ways of thinking, mankind has repeatedly experienced the healing, developing and educating effect of music. The aim of this study is to present how and what areas can be affected by playing and learning music in the development of children of the present society.

By learning music children can acquire skills and abilities that can influence not only their school results, but also their efficacy out of school due to the transfer effects. They learn values and acquire qualities that promote their better integration into the society and help them become valuable and responsible members. Such characteristics are for instance stronger endurance, greater commitment towards work and school as well as acquiring ethical norms and values. Thus, the transfer effect is pivotal for the role of music education in social development.

[1] Playful occassions for learning music organized for children under 3 together with their parents.

When analyzing the transfer effect of learning music it is important to highlight the effect of music and playing musical instruments on structural and functional changes, neurological processes as well as on the plasticity of the brain. Operations attached to playing music are all complex operations, which correlate with several cognitive, affective and psychomotor areas at the same time (Asztalos, 2016).

2 Transfer effect of learning music on health, physical development and skillfulness

Due to its stress-relieving effect, music can contribute to our physical and mental health, which is essential to healthy operation and development of a society. Moreover, several studies (Bálint, 1983; Urbánné, 1999; Varvasovszkyné, 1996) proved that music education has a positive effect on health, physiological and stress relieving processes. According to Gick (2011), biological, psychological and social aspects equally contribute to health. She examined amateur and professional singers using both qualitative and quantitative methods. Her results showed that singing has a clearly positive effect on breathing and in the short run on the immune system. Clift and Hancox (2001), in their survey based study, found that during singing, members of choirs experienced different physical, mental and emotional effects. Their results showed that 79% of the surveyed felt their stress levels decreasing while singing. According to a study from 2010, singing in a choir has several beneficial health effects. Clift and his colleagues came to a conclusion that the activity of singing plays a significant role in the development of breathing-lung capacity, the proper posture, physical activity and relieving stress.

The effects of active singing in a choir was found positive in the case of various groups. Kreutz and his colleagues (2003) observed physiological and psychometric mechanisms of action as well. Participants of the study gave account of positive changes in their psychological well-being and emotional state. Furthermore, the study revealed the immunogenetic effects of singing in a group. It plays a role in keeping the neurohumoral balance as well as in the increase of the production of slgA immunglobulin, which protects against infections of the upper respiratory tract. They also observed that the level of cortisol decreased in the organism, which resulted in the better operation of the immune system. However, these effects are significant only in case of active participation in the activity, simply listening to music has no impact.

In the research studies of Kokas and Eiben, children of music kindergarten performed better at movement memory and gymnastic type of tasks and they had better scores in tests on their physical development (vital capacity, breathing range). In the studies of Klára Kokas (1972) examining normal and music class

pupils, children in special music classes showed better results in the anthropology examinations (vital capacity) and they also scored better in terms of physical skillfulness (dynamic coordination, target toss, performing activities according to stick figure drawings, rhytmic free-activities).

In their examinations, Barkóczi and Pléh (1977) observed the coordination of movements, fine movements as well as movement possibilties performed in space during the performance of different types of dances and games. Musical activity requires precise timing, ordering and spacial implementation of several hierarchically structured activities. Thus coordinated and controlled series of movements are necessary during playing musical instruments. The development of imaging techniques enabled the observation of changes of musicians' brain functions and structures. They experienced anatomical brain changes among the musicians as a result of musical education: typically, the body of the cerebral cortex connecting the two hemispheres became thicker (Balogh & Turmezeyné, 2009). According to Altenmüller the cerebellum, which is responsible for fine motor movements, enlarged in case of musicians (Altenmüller, 2006) and this contributed to their skillfulness and success in movements. Furthermore, in these research studies we can read about the thickening of the primary auditory cortex (Gaser & Schlaug, 2003; Schneider et al, 2002) as well as the greater activity (Besson et al, 1994) in the area of the secondary and tertiary auditory field (Asztalos, 2016).

3 Transfer effect of learning music on cognitive skills

The school performance of children influences not only their possibilities in their further studies, but it can affect their self-confidence, social contacts and their bonding with their teachers and the school. This can therefore affect their future career prospects in the job market as well as their social acceptance or exclusion. That is why it is important to highlight the positive impact of learning music on cognitive skills, which is proved by the following research studies.

"They could see how much a little bit of more singing could rejoice the child if they listened to a couple of lessons in music primary schools. But they do not listen to them. Right there they could understand that music does not only teach music. These children count better, because the numbers are not abstract notions for them, they feel them in their bodies together with the rhythm. They can read fluently earlier, because in the sentence they feel the coherent form of music and make it felt. They write more clearly and more precisely, because writing sheet music trained them to be more attentive, a dot sliding aside means a different note. They learn spelling more quickly, their sense of graphics also develops. Finally, the child's self-esteem increases, he knows something that adults belittle or do not know at all. The adults' old indulgent smile when

hearing the present musical trials of the child disappears or freezes. There isn't a more effective way for the child's human development than this…" Kodály, 1956, p. 305.)

This quote of Kodály has compelled several researchers in Hungary and abroad alike to verify these statements scientifically.

In Hungary in 1963 it was Klára Kokas and Ottó Eiben who first conducted research on pupils of a music kindergarten in Szombathely. They experienced that children receiving special music education performed better in Mathematics tests (Kokas & Eiben, 1964). Klára Kokas went on to compare primary school pupils in normal and special music classes. Children in special music classes performed more precisely and more quickly, their work was characterized by strong attention, better solution methods and better skills for observation (tone, rhythm, perception of shape). The advantage of children with advanced music training could be detected in connection with exact school subjects, like spelling or Mathematical exercises (Kokas, 1972).

The summary that was written about the psychological analysis of the pupils taught by the Kodály method was part of the experiment planned by the Kodály Musical Training Institute. The summary was based on the visits to music lessons of schools using the Kodály method (Barkóczi & Pléh, 1977). They investigated the potential impact of the Kodály method of teaching music on the development of skills, abilities and personality. They summarized the experience of the visits to the lessons and the possible transfer effects in six areas: language education, Mathematics, movement skills, cooperating skills and other skills as well as the changes in memory and attention. From skills acquired during learning music the following can play a role in language teaching: distinguishing fine changes in tone, isolating sounds of speech, forming sounds, accent, attention categorization, identifying correlations, manipulating abstract notions, as well as signs and their interpretations. Thus, transfer effect can be possible due to the analogous features of music and language structures (Laczó, 2001). The correlation between foreign language skills and learning music was proved by several research studies. The perception of speech, pronunciation, word stress and sentence stress and their processing all showed positive correlations to learning music (Milovanov et.al, 2008, 2010; Slevc & Miyake, 2006; Tallal & Gaab, 2006). Zanutto detected that pupils learning music performed better in reading and language tests and their attention was stronger (Zanutto, 1997). Due to the specially planned music education in Mexico they experienced a significant increase in the vocabulary of children aged 5 and 6. During the programme they performed musical activities which facilitated the development of their ability to distinguish rhythm and tune and intensified their visual, auditory and motor abilities. The children who were taught by the traditional curriculum for music did not show any development in

their vocabulary (Moyeda, Gómez, & Flores, 2006). The researchers confirmed correlations between learning music and better verbal memory among boys aged 6-15. In the experiment, pupils who received music education showed significantly better performance as opposed to the control group (Ho, Cheung, & Chan, 2003). Wong and his colleagues with the help of EEG studied the processing of changes in pitch and found that musicians had better processing ability in this field. The length of time learning music changed parallel with the performance, the perception of sameness and differences, as well as the better processing of one-syllable Mandarin words. In another experiment English native speakers learned well-known English words that have different meanings with different intonations. Music studies contributed to success in this case as well (Wong & Perrachione, 2007; Wong et al., 2007).

Comparative studies were started under direction Zoltán Laczó's direction in 1978-1979. The aim of the analysis was to reveal the correlations between music skills, musical creativity, intelligence, socioeconomic status as well as musicality. During the study pupils of different social background attending special foreign language classes, special music or normal classes of junior and senior sections were examined (grades 3-4 and 6-7). Seashore tests of musical ability, Raven non-verbal intelligence tests were used and they were observing the improvising musical behaviour. The observations showed that in the school of the region with the lowest social status the results of intelligence of children in special music classes were significantly higher as compared to the other participants. Thus, the study concluded that, due to music education, the development of intelligence is more remarkable than it could be expected according to the socio-economic status. Pupils with better musical ability scored higher on the IQ tests than their peers with lower musical skills. Numerous further studies have given an account of the connection between learning music and general intelligence (Dombiné, 1992; Hargreaves, 2001; Janurik, 2020; Knappek, 2002; Schellenberg, 2006). Schumacher and Altenmüller found a positive correlation between learning music and intellectual ability, attention and endurance (Altenmüller, 2006; Schumacher, 2014). When studying the long term effects of learning music Schellenberg found that a slight, but long lasting effect can be seen in the development of intellectual abilities even years after learning music (Schellenberg, 2006). In reference to memory and attention Barkóczi and her colleagues perceived the strengthening of memory connected to moving, attached to seeing and hearing, as well as the possibility for an increase in the time of attention (Barkóczi & Pléh, 1977).

According to Huttenlocher (2002) learning music is a complex activity, comprising regular everyday practicing, reading music, memorizing longer music materials, acquiring diverse musical structures (interval, accords, scales). Learning music requires focusing the attention for a longer period of time and

the constant learning of motor skills. Furthermore, acquiring expressions driven by emotions is also a requirement. In his opinion combining all this experience is beneficial on cognition, especially in childhood, as it is the time when the development of the brain is very plastic and can be influenced by environmental effects.

Schellenberg (2004) also found connection between learning music and cognitive abilities, which cover a wide range of these cognitive abilities. He proposes three possible explanations 1. Any kind of out-of-school activities that are similar to school studies (e.g. reading, chess) promote intellectual growth. Apart from this, learning music may have special features 3. By means of the developing skills (memorizing, motor skills, emotional development, knowledge of musical systems) learning to play a musical instrument contributes to mental and intellectual growth. Most of these factors are utilized not only during playing music, but also during other non musical activities. In a special way it is music itself that causes the effect, as the abstract nature of music can contribute to the development of abstract thinking.

According to the assumption of Porowitz and her colleagues (2009) music can become a frame in which the basic cognitive structures can be explored and interpreted. They set the focus on the following cognitive components: 1. Comprehending and presenting patterns during which children can identify the important elements of music, for instance the patterns of melody and rhythm. Furthermore, discovering the metric hierarchy and eurhythmy relations within it also falls into this category. This can develop the stability of perception and help develop the basic Mathematical principles. In the case of music with text the improvement of word recognition and spelling abilities can be achieved. 2. Holistic perception, during which the elements of the structure as the building elements of the whole are perceived. 3. Merging and integrating concurrent and complex stimuli. When listening to music children listen to the compositions in their full musical complexity. Based on this they are able to perceive the global structure of music and answer related questions. Well structured music lessons help pupils consciously perceive and observe the complexity of music. They will be able to distinguish between pitch, dynamics, harmony and rhythm, and understand the relationships and their changes in music. This cognitive processing is of key importance in the Mathematical problem solving and in the ability to comprehend language. 4. With the help of self-regulation the person is able to observe, to study the possibilities and optional answers, to control the emotional reactions before starting the activity. This role is indispensable during a musical performance, as well as during listening to music and it is of great significance in the case of the general process of learning. The above described use of cognitive functions help children develop their abstract and logical

thinking and their problem solving skills with the help of which they can become better learners.

Recognizing and understanding the musical units of symbols can help in teaching Mathematics as well as understanding the connections within the symbol and the development of manipulating symbols (Barkóczi & Pléh, 1977). Gombás and Stachó (2004) studied the correlations between Mathematical skills and music skills among 10-14-year-old pupils. The results of the study showed that Mathematical total scores significantly correlated with the total scores for music. Within the Mathematical tasks the scores for problem solving exercises correlated with the scores for identifying tune and rhythm. When they took the number of years learning music into consideration, significant differences could be detected in total scores for Mathematics and music as well as in the scores for skills of recognizing rhythm (sense of rhythm). Regarding the correlation between the total score for the Mathematics tests and the years spent learning music they found that there were significant differences between the group of children who had never learnt music and those who had been learning it for a year. There were also significant differences regarding the correlation between the total scores in Gordon tests and the years of previous music education between pupils without any previous music education and those who had been learning it for a year. The fact whether the child receives music education or not seems to be the most important factor in terms of performance in the tests. At this young age it is not yet the length of learning music that counts, but the fact whether he or she has started learning music. This finding can mean that learning music affects Mathematical performance in a special way, in a by-pass way. Thus, according to this study Mathematical skills positively correlate with music skills.

Schmithorst and Holland (2004) also found evidence of the connection between music and Mathematics. The correlation between the two areas of study is based on the fact that playing from music sheets needs skills that are in connection with Mathmatical operations, for instance metre and rhythmic (Asztalos, 2016; Hallam, 2010). According to Nisbet there is significant connection between symbols incorporating the arrangement of music in time and Mathematical symbols used in connection with the concept of fractions (Nisbet, 1991). The results of the studies of Altenmüller (2006) also prove that learning music promotes the development of Mathematical skills. Whitehead studied the Mathematical performance of secondary school and university students, who were taught by the Orff Approach. The participants were divided into three groups randomly. The first group took part in music lessons 5 times a week, the second group had one 50-minute-music-lesson once a week, while the third group had no music education at all. The experiment lasted for 20 weeks. The group receiving 5 music lessons a week showed the highest and the most

significant performance increase. The group receiving one lesson a week showed limited growth whereas the least development in musical skills were seen in case of the students without any music education (Whitehead, 2001 as cited by Hodges & O'Connell, 2005).

Spelke (2008) studied how pupils identify geometrical characteristics of visual forms and she found that children receiving music education had higher performance than the results of pupils not learning music. According to the study of Wenger (1990), the use of cortical neurons operated during practicing musical pieces also intensifies cortical areas that play a role in Mathematical thinking.

According to the study of Janurik (2008) forming musical skills can promote learning to read successfully. Several research studies have found connections between the maturity of aptitude connected to speech sounds, which is significant because phonological awareness is important in the early phase of reading (Anvari et al., 2002). Who is skillful distinguishing the pitch of music sounds can cope more easily with reading (Moreno et al., 2009). Neurological studies also prove the results of studies on musical sounds and the processing of speech (Hámori, 2005). Gromko (2005) believes that listening comprehension develops more quickly as a result of playing musical instruments.

We can read about the positive transfer effect of listening to music on spatial abilities in several research studies. Rauscher and her colleagues experienced the short term development of spacial abilities while listening to Mozart sonata for two pianos. As the effect is very sensitive to the slightest change, its acceptance is not universal (Rauscher et al., 1993). Shaw (2000) thinks that the same neurological patterns are activated both in the case of spatial activities and listening to Mozart. We can conclude from this that the same cerebral areas are used during spacial and musical processing. The phenomenon can be experienced not only in connection with the music of Mozart, but also of Shubert and Albinoni. According to another theory there is neurological connection between spacial processing and processing musical rhythm (Janurik, 2008). Spelke (2008) revealed the long term correlation between learning to play the piano and thinking in space and time among kindergarten children.

According to the studies of Janurik (2008) the school performance of children learning music was significantly higher than the results of pupils not learning to play a musical instrument, provided that they had been learning to play music at least for four years. We can read about the correlation between successful school performance and learning music in the works of several researchers (Babo, 2004; Janurik, 2009; Knappek, 2002; Román-Caballero et al., 2021; Schellenberg, 2006; Winston et al., 2022). Among children learning music there is a tendency that they can activate energy in such cases when serious thinking

is required and perform well by showing a loose, playful attitude in cases when creativity is needed (Laczó, 2001).

4 The transfer effects of music on personality development and emotional intelligence

In the personality development of children the narrower and broader milieu is determining. Their lives and socialization can be influenced by the family, the school, various scenes of education, peers and different means of mass communication. The chance of learning music is higher if anyone in the narrower or broader environment plays music as it can serve as a role model for the child.

Music school and art school are not compulsory, however, they play an important role in the lives of children as they contribute to the children's personality development, they favorably influence socialization and promote more successful school performance. Children enrolling in a basic school of art get into a new milieu, they learn new activities and they are surrounded by a completely new system of values and norms. By playing music together this extracurricular activity generates a feeling of togetherness, the ability of self-devotion and subordination of self interest, with the help of which they become part of this small community and which can help them integrate into a bigger community, the society. Regular practicing teaches the pupils discipline, endurance, self control, hard work, purposefulness, willpower, sense of responsibility and personal commitment. All these characteristics can be excellently used in other areas of life as well. Tolerating success and failure toughens the character of the musicians. During playing music, self-expression and self-fulfillment can provide children a source of joy and the experience of flow (Custodero, 2002; Csíkszentmihályi, 2001) that can be a special experience resulting in the feeling of happiness and being contented. Children can experience the joy of immersion and total preoccupation (Csíkszentmihályi, 2013, 2015). Thus, experiences of flow may have a potential role in motivating the children to study. These autoletic activities mean occupation that children can pursue for its own sake, just for the pure joy experienced during the activity. Practicing and taking part in concerts needs constant self-assessment, through which the pupils get to know and appreciate themselves. Therefore playing music has a personality forming and value transmitting effect that can foster ethical, esthetical as well as community education (Chambra & Misra, 2012). It promotes the development of emotional and mental personality traits that determine the ideology of the pupils. Children consider expressivity a specifically important factor (Lindström et al., 2003).

It was Zoltán Kodály's belief that regular singing induces emotional, physical and mental development: "...we improve the development of the whole person…" (Kodály, as cited by Solymosi Tari, 2003). All the great civilizations believed that music has a personality forming effect. According to Kodály one is captured by music, which makes his or her spirit ordered. In his opinion *"music has a civilization creating mission: it contributes to building a world of an esthetically and ethically higher order"* (Solymosi, 2003).

Music teachers frequently experience that children can express their thoughts and feelings better with the help of music and other artistic activities (Ritók, 2010). However, in public education art education has been pushed into the background, other knowledge contents have come to the spotlight. Due to this tendency music schools and art schools are very popular in Hungary nowadays. There is a close connection between the two: what is not emphatic in public education claims its space elsewhere. As a result, more and more children have enrolled in basic art schools (Solymosi, 2003).

Vitányi Iván and his colleagues (Bácskai, Manchin, & Sági, 1972) conducted a follow-up study in 1970. The above mentioned sociologists studied the question what developing effect the years spent in a special music class had and whether it had any effect on the way of life further on. Therefore they searched for elementary school graduates of normal classes and special music classes four years after graduation. They examined their habits of visiting concerts, their taste for music, the composition of their collection of records, the characteristics of their artistic taste (fine arts, films, literature), their social status and whether they perform any musical activities. Their results proved that music played an important role in the lives of pupils of special music classes, which meant entertainment, recreation and esthetic experiences for them. The results of the study of their taste and choices clearly testify that graduates of music classes have a value judgment of a higher standard (Bácskai et al., 1972). American psychologists highlighted that through music education children can get to know other cultures, personal contacts as well as traditions (Gévayné, 2010).

In 1969 Ilona Barkoczi and her colleagues started a 3-year series of studies in Kecskemét, in which they studied the effect of the Kodály method. Their research question concerned whether it is music education or the socioeconomic status that had more influence on different areas of the personality. During different psychological examinations they compared children of normal and special music classes, as well as pupils with higher and lower socioeconomic status. The tests comprised the Rorschach personality test, the attention test (Piéron), intelligence tests as well as creativity tests, anxiety scale (Taylor) and sociometry (Barkóczi & Pléh, 1977). The results revealed that children attending special music classes adjust better to tasks requiring thinking, they

were more creative and more sensitive emotionally, they could process the experiences more profoundly and they had greater self control.

At the beginning of the 21st century it is more often believed that what we learn in school accounts only for about 20 percent of success, the remaining 80 percent depends on the emotional intelligence. Accordingly, in many cases EQ (emotional quotient) is measured instead of IQ, since art education plays a central role in the development of a higher EQ (Solymosi, 2003). At the same time, the function of the emotional area, in which music education plays an important role, is getting more and more attention. Bredács studies the mechanism of action of EQ (that is the emotional intelligence) and considers it crucial in the development of a creative personality (Bredács, 2009). More and more studies analyze the emotions generated by music and the reactions of the body to it. The correlation between emotional intelligence and music was revealed. In parallel with musical skills emotional skills move forward as well. It is indispensable to develop the EQ to achieve a successful creative activity that means a real experience. Apart from reaching the areas based on thinking it is necessary to get through the emotional layers (Uzsalyné, 2010). A life full of music contributes to the acceptance and understanding of the cultural heritage and the given culture. It helps unfold the personality, develop creativity, it promotes teamwork and the feeling of togetherness, consequently, music education contributes to become better people.

The most prominent music experience is provided by active musical activity. Another possibility is listening to music, which helps develop creativity and can be accompanied by a teacher's guidance and interpretation. This plays an important role in school, however it is a passive form (Dohány, 2009). During their studies Thompson and his colleagues came to a conclusion that adults who received music education in their childhood could more successfully identify emotions conveyed by speech (such as anger or sadness) in both spoken and unknown languages. They conducted the study among 6-year-old children and they also found that the participants receiving music education could identify emotions at a higher level. Therefore, Thomson and his colleagues believe that similar brain processes are activated during the processing of speech prosody and music (Thompson et al., 2004).

It is worth considering what characteristics pupils learning music have and what distinguishes them from their peers not learning music. Teachers working in schools with special music classes were questioned about this and it turned out that children learning music are gentler, finer and show more solidarity. The mentality of these children is completely different from that of in a normal class. The sense of achievement they experience while learning music improves their attitude to school. Besides, it promotes the contact between the parents and the school and they benefit from the effects of being educated by the

community, which develops their personality and social competences (Raffay, 2005). All of these contribute to their academic advancement.

5 The effect of music compensating for deficits

According to Bourdieu pupils from families of the lower strata start their school career with some disadvantage. However, this can be decreased, playing music can overwrite the effect of the traditional sociocultural (Harris, 1996) and socio-demographic background. When playing music the social differences disappear. During playing music together, members of the orchestra or choir do not feel any social differences, since they are working for one goal that is to present the music as authentic and demonstrative as possible. Meanwhile, family and ethnic affiliation does not matter. The sense of achievement provides greater self-confidence, which can help children in their academic advancement, in other areas of life and it can also promote their social mobility (Szűcs, 2019).

Because of the one to one teaching method used during music education teachers can pay more attention to and adjust to the pupils' personal needs and abilities, thus, less talented children with disadvantaged background can reach success more quickly and they can develop a bond to the teacher, the school and the activity as well. Giving encouragement, setting an example and building social awareness affects adaptation and success, thus, dropout can be reduced. A Venezuelan method of music pedagogy called El Sistema (called Szimfónia Program in Hungary) reinforces the above mentioned thoughts, its goal was to assist social mobility. As a result, now there are about 300 children's orchestras in the country. Thus, the method may be a kind of instrumental adaptation of the Kodály method (Kecskés & Vértesy, 2016). Klára Kokas performed investigations among children being raised in orphanages, the results of which proved the beneficial effect of music education in the case of children with disadvantaged background as well (Pethő, 2008). Learning music can increase pupils' level of resiliency[2], which can help them prosper despite their detriment (Lazarus & Folkman, 1984; Masten, 2001; Pikó, 2010; Pikó & Hamvai, 2012). The results of Vitányi's studies and those of his colleagues revealed that the class type is more determinate than the socio-economic status, as music education has influence on social mobility as well. Nearly all of the youngsters who came from poorer families and attended special music primary schools performed so well in school in 4 years time that they could continue living their future lives at a higher standard both from the point of view of social hierarchy and social standard of living (Bácskai et al., 1972).

Art education can help these children being brought up in families of marginal position to reduce dropout from primary school and to increase their motivation.

[2] ability to resist and adapt

The creative activity that they perform can mean a sense of achievement, which can help them restore their self-esteem and improve their school career as well. Furthermore, they can acquire values and methodology that can be utilized in their primary school work (Ritók, 2010).

6 The effect of music education on community building

The role of communities in personality development, their importance and their support in handling everyday problems have been proved by several research studies (Juhász, 2016, pp. 102-103). Musical art education outstandingly helps the process of integration into a community, accordingly, by strengthening social cohesion it contributes to reducing inequalities. Playing music often means a community activity, so it is suitable to teach children the rules and values necessary for living together (Degé, 2021). Such are for instance the acceptance of the values and norms of the community, being committed to and feeling responsible for the affairs and duties of the community, mutual support and cooperation as well as solidarity (Vercseg, 2014). Learning music also has a human socializing outcome, being integrated in a music community may help integrate into other communities and the society as well. Within the community informal contacts, partnerships, friendships may be formed. The feeling of belonging to a community is extremely important in the present alienated world. In the time of the physical and emotional instability of adolescence it is beneficial for the life of a child to have a place where they enjoy themselves surrounded by peers with the same interest. Community building is a result of personal and collective development, which is a complex and long process. According to L. Nagy (2004, p. 50.): *"Common musical activities should not only mean making music together, but social cooperation to help each other's personality development and social competencies as well. By forming communities playing music, with the help of music we can build communities that are presently hardly working in the society: between child and parent, student and student, audience and performer, cultural communities between past and present, one nation and another one and between ourselves and the world."*
In connection with the development of cooperating skills Barkóczi and Pléh experienced that children learning music were keeping the rules while working together, they were building personal contacts, they carefully observed the instructions, they accepted the goals of the community, they were willing to co-operate with the community, they were building an optimistic consciousness, their self-control was developing and they were able to work individually (Barkóczi & Pléh, 1977). The studies of social contacts highlighted that in special music classes the rate of marginalized children coming from impoverishing families was lower. The analyses also proved that cultural deficit caused by disadvantageous social status could be diminished by music education.

This can be enforced by changing the structure of intelligence and developing creativity while the correlation between creativity is intensified and the correlation between social status and intelligence weakens (Barkóczi & Pléh, 1977; Raffay, 2005).

Ferenc Mérei also conducted sociometric studies comparing special music classes and normal classes. They assumed that the sociometric composition of the two types of classes would differ. They observed that in the case of classes with the normal curriculum, several smaller groups with sharp distances were formed. Furthermore, rivalry between the groups was typical. Special music classes were proved to be "soft" communities with two or three distinct groups. The groups were helping and supporting each other and they were co-operating at a high level. Democratic leadership was developed and their choices were made according to objective criteria. These characteristics can be interpreted as the higher level socializing effect of intensive musical activities and playing music together (Gévayné, 2010). Altenmüller (2006) detected significant improvements in the social behavior of pupils learning music. In general it can be stated that there are fewer completely excluded children among them.

The study of the correlation between music education and the transfer effects cannot be closed yet. Therefore additional studies and approaches are necessary."It is worth paying heed to Kodály's words: *"If it is true that people with such heterogeneous cultures can meet in music, then the obvious reason can be that music is a means of expression for the human soul, which is accessible for everybody no matter how simplex a culture they are involved in. And indeed if we look back on the history of culture and the cultural peaks, we can find music in the leading position. It was so in the Greek civilization, during the Renaissance, it has been like that - and still is - in the Far East, in the Chinese, Japanese and Indian civilizations. Music loses its leading position if the given culture is declining and the splendid era is coming to its end."* (Kodály, as cited by Solymosi Tari, 2003).

Conclusion

Despite the above presented positive effects, music education is often pushed in the background; the values, which music education can bring up and intensify, are often neglected. According to the Magyar Ifjúság (The Hungarian Youth) 2016 research, only the 5-6 percent of the 15-29-year-old age group spend their free time playing music or performing other artistic activities (Székely & Szabó, 2016). It can be a problem that art is displaced not only from spare time activities but it is on the periphery in schools as well. This paradoxical phenomenon motivated us to present the social - economic and community effects of learning music. Through learning music pupils can acquire characteristics and skills, which cannot be defined in terms of money, but they have an outstanding social

impact. All this gives a new perspective for the importance of learning music, which is crucial in the present day profit oriented way of thinking.
Furthermore, it is worth considering raising the awareness of the abilities and skills brought about by learning music in broad layers of the society. Providing information in a proper and fair way plays an important role in it. That is why we presented these phenomena and gave an overview of how diversely music can be used in the development of children. It is important to share the objective facts and experience of the profession, which can shed light on the potential effects of learning music for professionals and non-professionals alike. The recent test results in public education are not promising. In theory music education cannot change it, but it can improve the child's motivation, learning methods, social skills, different basic competences through learning to play a musical instrument and learning music.

References

Altenmüller, E. (2006). *Musikalsiches Lernen und Hirnentwicklung.* Retrieved from http://www.clubofrome.de/schulen/schulen/downloads/altenmueller_musikalisches_lernen_hirnentwicklung.pdf

Anvari, S. H., Trainor, L. J., Woodside, J., & Levy, B. A. (2002). Relations among musical skills, phonological processing, and early reading ability in preschool children. *Journal of Experimental Child Psychology*, *83*(2), 111-130.

Asztalos, K. (2016). *A zenei észlelési képesség szerkezete és fejlődése 5-17 éves korban – Online diagnosztikus mérések óvodai és iskolai környezetben* (doctoral dissertation).

Babo, G. B. (2004). The relationship between instrumental music participation and standardized assessment achievement of middle school students. *Research Studies in Music Education*, *22*(1), 14-26.

Bácskai, E., Manchin, R., Sági, M., & Vitányi, I. (1972). *Ének-zenei iskolába jártak.* Budapest: Zeneműkiadó.

Bálint, Á. (1983). *A zeneterápia elemei* (manuscript). Doba.

Balogh, L., & Turmezeyné Heller, E. (2009). *Zenei tehetséggondozás és képességfejlesztés.* Debrecen: Kocka Kör Tehetséggondozó Kulturális Egyesület.

Barkóczi, I., & Pléh, Cs. (1977). *Kodály zenei nevelési módszerének pszichológiai hatásvizsgálata.* Kecskemét: Kodály Intézet.

Besson, M., Gaita, F., & Requin, J. (1994). Brain wavers associated with musical incongruities differ for musicians and non-musicians. *Neuroscience Letters*, *168*, 101-105.

Bourdieu, P. (1999). Gazdasági tőke, kulturális tőke, társadalmi tőke. In R. Angelusz (Ed.), *A társadalmi rétegződés komponensei* (pp. 156-178). Budapest: Új Mandátum.

Bredács, A. (2009). Az érzelmi intelligencia és fejlesztése az iskolában – különös tekintettel a tehetséggondozásra. *Iskolakultúra*, *19*, (5-6), 55-72.

Chabra, S., & Misra, M. (2012). A study of the effect of learning music on the personal values of adolescent students. *MIER Journal of Educational Studies, Trends and Practices, 2*(2), 158-167.

Clift, S., Hancox, G., Morrison, I., Hess, B., Kreutz, G., & Stewart, D. (2010). Choral singing and psychological wellbeing: Quantitative and qualitative findings from English choirs in a cross-national survey. *Journal of Applied Arts and Health, 1*(1), 19-34.

Clift, S. M., & Hancox, G. (2001). The perceived benefits of singing: Findings from preliminary surveys of a university college choral society. *The Journal of the Royal Society for the Promotion of Health, 121*(4), 248-256.

Custodero, L. A. (2002). Seeking challenge, finding skill: Flow experience and music education. *Arts Education Policy Review, 103*(3), 3-9.

Csíkszentmihályi, M. (2001). *Flow.* Budapest: Akadémia Kiadó.

Csíkszentmihályi, M. (2013). *Az öröm művészete - Flow a mindennapokban.* Budapest: Libri Könyvkiadó Kft.

Csíkszentmihályi, M. (2015). *Flow - Az áramlat - A tökéletes élmény pszichológiája.* Budapest: Akadémia Kiadó Zrt.

Degé, F. (2021). Music lessons and cognitive abilities in children: How far transfer could be possible. *Frontiers in Psychology, 11*. https://doi.org/10.3389/fpsyg.2020.557807

Dohány, G. (2009). Zenei élmény az énekórán? *Iskolakultúra Online, 19*(3), 70-79.

Dombiné Kemény, E. (1992). A zenei képességeket vizsgáló tesztek bemutatása, összehasonlítása és hazai alkalmazásának tapasztalatai. In E. Czeizel, & A. Batta (Eds.), *A zenei tehetség gyökerei* (pp. 207-248). Budapest: Arktisz Kiadó.

Forgács, A. (Ed.). (2009). *ISCED - Az oktatás egységes nemzetközi osztályozási rendszere.* Retrieved from http://ofi.hu/isced-az-oktatas-egyseges-nemzetkozi-osztalyozasi-rendszere

Gaser, C., & Schlaug, G. (2003). Brain structures differ between musicians and nonmusicians. *Journal of Neuroscience, 23*(27), 9240-9245.

Gévayné Janurik, M. (2010). *A zenei hallási képességek fejlődése és összefüggése néhány alapkészséggel 4-8 éves kor* (doctoral dissertation).

Gick, M. L. (2011). Singing, health and well-being: A health psychologist's review. *Psychomusicology: Music, Mind & Brain, 21*(1-2), 176-207.

Gombás, J., & Stachó, L. (2004). *Matematikai és zenei képességek vizsgálata 10-14 éves gyerekeknél.* Retrieved from elib.kkf.hu/okt_publ/tek_2006_35.pdf

Gromko, J. (2005). The effect of music instruction on phonemic awareness in beginning readers. *Journal of Research in Music Education, 53*(3), 199-209.

Hallam, S. (2010). The power of music: its impact on the intellectual, social and personal development of children and young people. *International Journal of Music Education, 28*(3), 269-289.

Hámori, J. (2005). Az emberi agy plaszticitása. *Magyar Tudomány, 50*(1), 43-51.

Hargreaves, D. J. (1986/2001). *The developmental psychology of music.* New York: Cambridge University Press.

Harris, C. E. (1996). Technology, rationalities, and experience in school music policy. *Arts Education Policy Review, 97*(6), 23-32.

Ho, Y., Cheung, M., & Chan, A. S. (2003). Music training improves verbal but not visual memory: Cross-sectional and longitudinal explorations in children. *Neuropsychology, 17*(3), 439-450.

Hodges, D. A., & O'Connell, D. S. (2005). The impact of music education on academic achievement. *Sounds of Learning Status Report, Ch. 2.* Retrieved from http://www.uncg.edu/ mus/soundsoflearning.html

Huttenlocher, E. R. (2002). *Neural plasticity: The effect of environment on the development of the celebral cortex.* Cambridge: Harvard University Press.

Janurik, M. (2008). A zenei képességek szerepe az olvasás elsajátításában. *Magyar Pedagógia, 108*(4), 289-317.

Janurik, M. (2009). Hogyan viszonyulnak az általános és középiskolás tanulók a klasszikus zenéhez? *Új Pedagógiai Szemle, 59*(7), 47-64.

Janurik, M. (2020). A zenetanulás transzferhatásairól nemzetközi és hazai kutatások tükrében. *Valóság: Társadalomtudományi Közlöny, 63*(7), 77-94.

Juhász, E. (2016). *A felnőttek képzése és művelődése egykor és ma Magyarországon.* Debrecen: Csokonai Kiadó.

Kecskés, D., & Vértesy, J. (2016). Milyen szerepet kaphat az El Sistema programjának alkalmazása Magyarországon? *Parlando, 58*(4).

Knappek, R. (2002). Az intenzív zenei nevelés hatása a gyermekek általános és individuális fejlődésére. Hans Günther Bastian berlini felmérése az emelt óraszámú aktív zenélés hatásairól. In M. Székely (Ed.), *Hang és lélek Új utak a zene és társadalom kapcsolatában. Zenei nevelési konferencia* (pp. 95-108). Budapest: Magyar Zenei Tanács.

Kodály, Z. (1956). „Tanügyi bácsik! Engedjétek énekelni a gyermekeket!" In *Visszatekintés I.* (pp. 304-309). Budapest: Zeneműkiadó.

Kokas, K., & Eiben, O. (1964). Szombathelyi zenei óvodás gyermekek testi-szellemi fejlődésének vizsgálatáról. *Vasi szemle, 18*(3).

Kokas, K. (1972). *Képességfejlesztés zenei neveléssel.* Budapest: Zeneműkiadó.

Kreutz, G., Bongard, S., Rohrmann, S., Grebe, D., Bastian, H. G., & Hodapp V. (2003). Does singing provide health benefits? In *Proceedings of the 5th Triennial ESCOM Conference* (pp. 216-219).

L. Nagy, K. (2004). A kereszttantervi kompetenciák fejlesztésének lehetőségei az ének-zene területén II. rész. *Új Pedagógiai Szemle, 54*(3), 36-51.

L. Ritók, N. (2010). *Művészeti nevelés és hátrányos helyzet.* Retrieved from http://www.tani-tani.info/081_ritok, 2017. 06. 21.

Laczó, Z. (2001). „Zenepedagógia és társadalom" In M. Székely (Ed.), *Hang és lélek* (pp. 83-95). Budapest: Magyar Zenei Tanács.

Lazarus, R., & Folkman, S. (1984). *Stress appraisal and coping*. New York: Springer.

Lindström, E., Juslin, P. N., Bresin, R., & Williamon, A. (2003). "Expressivity comes from within your soul": A questionnaire study of music pupils' perspectives on expressivity. *Research Studies in Music Education, 20*(1), 23-47.

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. American *Psychologist, 56*(3), 227-238.

Milovanov, R., Huotilainen, M., Valimaki, V., Esquef, P. A. A., & Tervaniemi, M. (2008). Musical aptitude and second language pronunciation skills in school-aged children: Neural and behavioral evidence. *Brain Research, 1194*, 81-89.

Milovanov, R., Pietila, P., Tervaniemi, M., & Esquef, P. A. A. (2010). Foreign language pronunciation skills and musical aptitude: A study of Finnish adults with higher education. *Learning and Individual Differences, 20*(1), 56-60.

Moreno, S., Marques, C., Santos, A., Santos, M., Castro, S. L., & Besson, M. (2009). Musical training influences linguistic abilities in 8-year-old children: More evidence for brain plasticity. *Cerebral Cortex, 19*(3), 712-723.

Moyeda, I. X. G., Gómez, I. C., & Flores, M. T. P. (2006). Implementing musical program to promote preschool children's vocabulary development. *Early Childhood Research and Practice, 8*(1), 2-12.

Nisbet, S. (1991). Mathematics and music. *The Australian Mathematics Teacher, 47*(4), 4-8.

Pethő, V. (2008). *Kodály Zoltán zenepedagógiájának vizsgálata írásai tükrében.* Retrieved from www.mzmsz.hu/index.php?...kodaly-zoltan...vizsgalat...

Pikó, B., & Hamvai, Cs. (2012). Stressz, coping és reziliencia korai serdülőkorban. *Iskolakultúra, 22*(4), 24-33.

Pikó, B. (Ed.). (2010). *Védőfaktorok nyomában. A káros szenvedélyek megelőzése és egészségfejlesztés serdülőkorban.* Budapest: L'Harmattan.

Portowitz, A., Lichtenstein, O., Egorov, L., & Brand, E. (2009). Underlying mechanisms linking music education and cognitive modifiability. In S. Malbran, & G. Mota (Eds.), *Proceedings of 22. International Seminar on Research in Music Education* (pp. 1-13). Porto: Portugal.

Raffay, Zs. (2005). *Az esélyegyenlőtlenség csökkentése zenei neveléssel.* Szakdolgozat. Budapest: ELTE Pedagógiai és Pszichológiai Kar.

Rauscher, F. H., Shaw, G. L., & Ky, K. N. (1993). Music and spatial task performance. *Nature, 365*, 611.

Román-Caballero, R., Vadillo, M. A., Trainor, L., & Lupiáñez, J. (2021). Please don't stop the music: A meta-analysis of the cognitive and academic benefits of instrumental musical training in childhood and adolescence. *Educational Research Review, 35*, 100436. https://doi.org/10.1016/j.edurev.2022.100436

Schellenberg, E. G. (2004). Music lessons enhance IQ. *Psychological Science, 15*(8), 511-514.

Schellenberg, E. G. (2006). Long term positive associations between music lessons and IQ. *Journal of Educational Psychology, 98*(2), 457-468.

Schmithorst, V. J., & Holland, S. K. (2004). The effect of musical training on the neural correlates of math processing: a functional magnetic resonance imaging study in humans. *Neuroscience Letters, 354*, 193-196.

Schneider, P., Scherg, M., Dosch, H. G., Specht, H. J., Gutschalk, A., & Rupp, A. (2002). Morphology of Heschl's gyrus reflects enhanced activation in the auditory cortex of musicians. *Nature Neuroscience, 5*(7), 688-694.

Schumacher, R. (2014). *Bessere Noten durch Musik?* Retrieved from http://www.lernwelt.at/downloads/machtmozartschlaudrralphschumacher.pdf

Shaw, G. L. (2000). *Keeping Mozart in Mind.* San Diego: Academic Press.

Slevc, L. R., & Miyake, A. (2006). Individual differences in second language proficiency: Does musical ability matter? *Psychological Science, 17*(8), 675-681.

Solymosi Tari, E. (Ed.). (2003). *Iskolapélda - rádiós beszélgetés.*

Spelke, E. (2008). Effects of music instruction on developing cognitive systems at the foundations of mathematics and science. In C. Asbury, & B. Rich (Eds.), *Learning, Arts, and the Brain* (pp. 17-49). New York: Dana Press.

Székely, L., & Szabó, A. (Eds.). (2016). *Magyar Ifjúság Kutatás 2016.* Retrieved from www.ujnemzedek.hu/sites/.../magyar_ifjusag_2016_a4_web.pdf

Szűcs, T., & Héjja, B. E. (2017). The Institutional Network and State of Music Education in Hungary. *HERJ, 7*(3), 39-54.

Szűcs, T. (2019). *Alapfokú művészeti iskola, egy esélynövelő iskolatípus.* Debrecen: Debreceni Egyetemi Kiadó.

hlanguage development. *Trends in Neuroscience, 29*(7), 382-390.

Thompson, W. F., Schellenberg, E. G., & Husain, G. (2004). Decoding speech prosody: Do music lessons help? *Emotion, 4*(1), 46-64.

Urbánné Varga, K. (1999). *Nyílj ki, nyüj ki bokrostul.* Pilisborosjenő: Pedagógus-továbbképzési módszertani és információs központ.

Uzsalyné Pécsi, R. (2010). *A nevelés az élet szolgálata, Az érzelmi intelligencia fejlesztése – A lélek mozgását kísérő nevelés.* Pécs: Kulcs a muzsikához Kiadó.

Varvasovszkyné Velsz, D. (1996). Tehetséggondozás a zeneterápia alkalmazásával. *Speciális pedagógia, 3*(2), 1-8.

Vercseg, I. (2014). *Közösségelmélet.* Budapest: ELTE.

Wenger, W., & Wenger, S. H. (1990). Training music sight-reading and perfect pitch in young children, as a way to enhance their intelligence. *Journal of the Society for Accelerative Learning and Teaching, 15,* 77-89.

Winston, J. L., Jazwinski, B. M., Corey, D. M., & Colombo, P. J. (2022). Music training, and the ability of musicians to harmonize, are associated with enhanced planning and problem-solving. *Frontiers in Psychology, 12.* https://doi.org/10.3389/fpsyg.2021.805186

Wong, P. C. M., & Perrachione, T. (2007). Learning pitch patterns in lexical identification by native English-speaking adults. *Applied Psycholinguistics, 28*(4), 565-585.

Wong, P. C. M., Skoe, E., Russo, N. M., Dees, T., & Kraus, N. (2007). Musical experience shapes human brainstem encoding of linguistic pitch patterns. *Nature Neuroscience, 10*(4), 420-422.

Zanutto, D. R. (1997). *The Effect of Instrumental Music Instruction on Academic Achievement* (doctoral dissertation). California State University.

Zatorre, R. J., Chen, J. L., & Penhune, V. B. (2007). When the brain plays music: auditory-motor interactions in music perception and production. *Nature Reviews Neuroscience, 8*(7), 547-558.