

Does a Year of Music School Make a Difference? Assessing the Development of Emotion Comprehension in Children Aged 6–8 Years

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ABSTRACT

Background. Emotion comprehension predicts future social and academic performance, as well as success in work and personal life. Musical training seems like a natural way to develop emotion comprehension. The association between emotion comprehension development and musical training in children is supported by theoretical analysis and seems natural because music is inseparably associated with the experience, expression, and perception of emotions. However, there is limited empirical evidence supporting the existence of such an association in preschool children.

Objective. The present study aimed to examine the difference in the development of emotion comprehension within a year between children who received musical training at a music school (piano, choir, and “solfeggio” (theory of music)) for two years and children who did not receive any training.

Design. There were two groups with 22 children (17 girls and 5 boys) in each group: The first group did not receive any training whilst the second group received musical training. In the group with musical training, the music school programme included individual piano classes twice a week, group choir singing once a week, and group solfeggio class once a week. The first assessment of emotion comprehension was performed in the autumn of 2022. All children were 6–7 years old ($M=79.4$ months, $SD=4.14$ months) and it was their last year in kindergarten. The second assessment of emotion comprehension was performed one year later. All children had already spent 2–3 months in the first school grade. In both groups, about 90% of the mothers had a higher education, and 75% of the families reported they had an average level of income with the remaining 25% having above the average level of income. Emotion comprehension was assessed using the Test of Emotion Comprehension.

Results. The study revealed that children who received musical training had larger increases within a year in the ability to understand external causes of emotions and the ability to understand mental causes of emotions compared to children who did not receive any training. At the first assessment, the group with musical training and the group with

no training did not differ in the emotion comprehension. Therefore, differences in emotion comprehension development within a year were not related to its initial level.

Conclusion. This study has several limitations, such as a small sample size and the absence of a comparison group of children engaged in other artistic training, such as dancing or painting. Despite these limitations, the research conducted allows us to draw conclusions about the significant potential of music education for children's emotional development. Further research is needed to gain a better understanding of what constitutes effective music education.

Keywords: Emotion comprehension; musical training; preschool children; elementary school children

Highlights:

- The present findings documented a positive association between musical training and the development of emotion comprehension over one year.
- Children who attended music school showed significantly greater development over the year in their ability to understand both external and mental causes of emotions compared to children who did not receive any training.
- In order to express the mood of a piece of music, a child has to visualise different images during their lessons. This process fosters a better understanding of the specific situations that give rise to different emotions.

АННОТАЦИЯ

ВЛИЯЕТ ЛИ ГОД ОБУЧЕНИЯ В МУЗЫКАЛЬНОЙ ШКОЛЕ НА РАЗВИТИЕ ПОНИМАНИЯ ЭМОЦИЙ У ДЕТЕЙ 6–8 ЛЕТ?

Актуальность. Понимание эмоций является предиктором будущей успеваемости, социальной адаптации, а также успешности в работе и личной жизни. Обучение музыке представляется естественным способом развития понимания эмоций. Связь между особенностями понимания эмоций и наличием музыкальных занятий у детей подтверждается теоретическим анализом и кажется закономерной, поскольку музыка неразрывно связана с переживанием, выражением и восприятием эмоций. Однако эмпирических данных, подтверждающих существование такой связи у детей дошкольного возраста, недостаточно.

Цель. Данное исследование направлено на изучение различий в развитии понимания эмоций на протяжении года между детьми, которые в течение двух лет обучались в музыкальной школе (игре на фортепиано, хору и сольфеджио), и детьми, не посещающими никаких дополнительных занятий.

Дизайн. Были сформированы две группы по 22 ребенка (17 девочек и 5 мальчиков) в каждой: первая группа не посещала никаких дополнительных занятий, вторая группа посещала музыкальную школу. Программа музыкальной школы для второй группы включала индивидуальные занятия фортепиано два раза в неделю, групповые занятия хором один раз в неделю и групповые занятия сольфеджио один раз в неделю. Первая оценка понимания эмоций была проведена осенью 2022 года. Всем детям было 6–7 лет ($M = 79,4$ месяца, $SD = 4,14$ месяца), и это был их последний год в детском саду. Вторая оценка понимания эмоций проводилась год спустя. К этому моменту все дети уже 2–3 месяца учились в первом классе школы. В обеих группах около 90% матерей имели высшее образование, 75% семей сообщили о среднем уровне дохода, остальные 25% — об уровне дохода выше среднего. Понимание эмоций оценивалось с помощью «Теста понимания эмоций» Ф. Понса и П.Харриса.

Результаты. Исследование выявило, что у детей, посещавших музыкальную школу, за год наблюдался более значительный прирост способности понимать

внешние причины эмоций и способности понимать ментальные причины эмоций по сравнению с детьми, не получавшими музыкального образования. При первой оценке сравниваемые группы не различались по уровню понимания эмоций, следовательно, различия в развитии понимания эмоций на протяжении года не были связаны с их исходным уровнем.

Заключение. Данное исследование имеет ряд ограничений, таких как небольшой размер выборки и отсутствие контрольной группы детей, занимающихся другими видами искусства, например танцами или рисованием. Несмотря на эти ограничения, проведенное исследование позволяет сделать выводы о значительном потенциале музыкального образования для эмоционального развития детей. Необходимы дальнейшие исследования для более глубокого понимания того, что представляет собой эффективное музыкальное образование.

Ключевые слова: Понимание эмоций; музыкальное обучение; дети дошкольного возраста; дети младшего школьного возраста

Ключевые положения:

- Полученные результаты подтверждают наличие положительной связи между наличием музыкальных занятий и развитием понимания эмоций в течение года.
- Дети, посещавшие музыкальную школу, продемонстрировали за год значительно большее развитие способности понимать как внешние, так и ментальные причины эмоций по сравнению с детьми, не посещающими никаких дополнительных занятий.
- Чтобы передать настроение музыкального произведения, ребенок должен визуализировать различные образы. Этот процесс способствует лучшему пониманию конкретных ситуаций, которые вызывают различные эмоции.

RESUMEN

¿UN AÑO EN UNA ESCUELA DE MÚSICA MARCA LA DIFERENCIA?
EVALUACIÓN DEL DESARROLLO DE LA COMPRESIÓN DE LAS
EMOCIONES EN NIÑOS DE 6 A 8 AÑOS

Antecedentes. La comprensión de las emociones predice el rendimiento social y académico futuro, así como el éxito en el ámbito laboral y personal. La formación musical parece una vía natural para desarrollar esta comprensión emocional. La asociación entre el desarrollo de la comprensión de las emociones y la formación musical en niños está respaldada por el análisis teórico y parece natural, ya que la música está inseparablemente asociada con la experiencia, la expresión y la percepción de las emociones. Sin embargo, la evidencia empírica que respalda la existencia de dicha asociación en niños preescolares es limitada.

Objetivo. El presente estudio tuvo como objetivo examinar la diferencia en el desarrollo de la comprensión de las emociones en el transcurso de un año entre niños que recibieron formación musical en una escuela de música (piano, coro y «solfeo» (teoría de la música)) durante dos años y niños que no recibieron ninguna formación.

Diseño. Se conformaron dos grupos con 22 niños (17 niñas y 5 niños) en cada grupo. El primer grupo no recibió a ninguna clase adicional, el segundo grupo asistía a una escuela de música. En el grupo con formación musical, el programa de la escuela de música incluía clases individuales de piano dos veces por semana, canto coral grupal una vez por semana y clase grupal de solfeo una vez por semana. La primera evaluación de la comprensión de las emociones se realizó en otoño de 2022. Todos los niños tenían entre 6 y 7 años ($M = 79.4$ meses, $DE = 4.14$ meses) y era su último año en el jardín de infancia. La

segunda evaluación de la comprensión de las emociones se llevó a cabo un año después. Todos los niños habían pasado ya entre 2 y 3 meses en el primer grado escolar. En ambos grupos, alrededor del 90% de las madres tenían educación superior, y el 75% de las familias reportaron tener un nivel de ingresos medio, mientras que el 25% restante tenía un nivel de ingresos superior al medio. La comprensión de las emociones se evaluó mediante el Test de Comprensión de las Emociones (F. Pons, P. Harris).

Resultados. El estudio reveló que los niños que recibieron formación musical mostraron mayores incrementos en el lapso de un año en la capacidad para comprender las causas externas de las emociones y la capacidad para comprender las causas mentales de las emociones en comparación con los niños que no recibieron ninguna formación. En la primera evaluación, el grupo con formación musical y el grupo sin formación no difirieron en la comprensión de las emociones. Por lo tanto, las diferencias en el desarrollo de la comprensión de las emociones en el transcurso de un año no estuvieron relacionadas con su nivel inicial.

Conclusión. Este estudio tiene varias limitaciones, como el tamaño reducido de la muestra y la ausencia de un grupo de comparación de niños que participaran en otras formaciones artísticas, como danza o pintura. A pesar de estas limitaciones, la investigación realizada permite extraer conclusiones sobre el potencial significativo de la educación musical para el desarrollo emocional de los niños. Se necesita más investigación para comprender mejor qué constituye una educación musical efectiva.

Palabras clave: Comprensión de las emociones; formación musical; niños preescolares; niños de primaria

Aspectos destacados:

- Los presentes hallazgos documentaron una asociación positiva entre la formación musical y el desarrollo de la comprensión de las emociones durante un año.
- Los niños que asistieron a la escuela de música mostraron un desarrollo significativamente mayor a lo largo del año en su capacidad para comprender tanto las causas externas como las causas mentales de las emociones en comparación con los niños que no recibieron a ninguna actividad adicional.
- Para expresar el estado de ánimo de una pieza musical, el niño debe visualizar diferentes imágenes durante sus lecciones. Este proceso fomenta una mejor comprensión de las situaciones específicas que dan lugar a diferentes emociones.

RESUME

LE NOMBRE D'ANNEES D'APPRENTISSAGE DANS UNE ECOLE DE MUSIQUE INFLUENCE-T-IL LE DEVELOPPEMENT DE LA COMPREHENSION DES EMOTIONS CHEZ LES ENFANTS DE 6 A 8 ANS?

Origines. La compréhension des émotions est un prédicteur de la réussite future, de l'adaptation sociale ainsi que du succès professionnel et personnel. L'apprentissage de la musique apparaît comme un moyen naturel de développer la compréhension des émotions. Le lien entre les particularités de la compréhension des émotions et la pratique musicale chez les enfants est confirmé par l'analyse théorique et semble logique, car la musique est indissociablement liée à l'expérience, à l'expression et à la perception des émotions. Cependant, les données empiriques confirmant l'existence de ce lien chez les enfants d'âge préscolaire restent insuffisantes.

Objectif. Cette étude vise à examiner les différences dans le développement de la compréhension des émotions au cours d'une année entre des enfants ayant suivi pendant deux ans une formation dans une école de musique (piano, chant choral et solfège) et des enfants ne fréquentant aucune activité extrascolaire.

Méthode. Deux groupes de 22 enfants (17 filles et 5 garçons) ont été constitués: le premier groupe ne pratiquait aucune activité extrascolaire, le second groupe fréquentait une école de musique. Le programme comprenait, pour le second groupe, des cours individuels de piano deux fois par semaine, des cours collectifs de chœur une fois par semaine et des cours collectifs de solfège une fois par semaine. La première évaluation de la compréhension des émotions a été réalisée à l'automne 2022. Tous les enfants avaient alors 6–7 ans ($M = 79,4$ mois, $SD = 4,14$ mois) et se trouvaient dans leur dernière année de maternelle. La deuxième évaluation a eu lieu un an plus tard, lorsque les enfants fréquentaient depuis 2 à 3 mois la première année de l'école primaire. Dans les deux groupes, environ 90 % des mères avaient un niveau d'enseignement supérieur, 75 % des familles ont déclaré un niveau de revenu moyen et 25 % un niveau de revenu supérieur à la moyenne. La compréhension des émotions a été évaluée à l'aide du « Test de compréhension des émotions » de F. Pons et P. Harris.

Résultats. L'étude a montré que les enfants fréquentant une école de musique ont présenté, au cours d'une année, une augmentation plus importante de la capacité à comprendre les causes externes et mentales des émotions par rapport aux enfants n'ayant pas reçu d'éducation musicale. Lors de la première évaluation, les groupes ne différaient pas quant au niveau de compréhension des émotions, ce qui indique que les différences observées au cours de l'année ne sont pas liées au niveau initial.

Conclusion. Cette étude présente certaines limites, notamment la taille réduite de l'échantillon et l'absence d'un groupe de contrôle pratiquant d'autres formes d'art (par exemple la danse ou le dessin). Malgré ces limites, les résultats permettent de conclure au potentiel significatif de l'éducation musicale pour le développement émotionnel des enfants. Des recherches supplémentaires sont nécessaires pour mieux comprendre ce qui constitue une éducation musicale efficace.

Mots-clés: Compréhension des émotions; apprentissage musical; enfants d'âge préscolaire; enfants d'âge scolaire primaire

Points principaux:

- Les résultats confirment l'existence d'un lien positif entre la pratique musicale et le développement de la compréhension des émotions au cours d'une année.
- Les enfants fréquentant une école de musique ont montré un développement significativement plus important de la capacité à comprendre les causes externes et mentales des émotions par rapport aux enfants ne suivant aucune activité extrascolaire.
- Pour transmettre l'ambiance d'une œuvre musicale, l'enfant doit visualiser différentes images, ce qui contribue à une meilleure compréhension des situations suscitant diverses émotions.

Introduction

Emotion comprehension is the ability to understand the nature, causes, and consequences of one's own emotions and those of others, and how to manage emotions in everyday life (Harris et al., 2016; Moller et al., 2022; Salovey & Mayer, 1990). Emotion comprehension in early years predicts future social and academic performance (Pauletto et al., 2021; Viana et al., 2020; Voltmer & Von Salisch, 2017). In adulthood, emotion comprehension is required for success in work and personal life (Chen et al., 2016; Jardine et al., 2022; Ruiz-Aranda et al., 2014). Emotion comprehension unfolds in levels, each with its own age boundaries, developing in a well-known model (Pons & Harris, 2005; Guseva, 2025). This model delineates three hierarchi-

cal levels of emotion comprehension. In the first level (3–6 years), children learn to recognise emotions based on facial expressions and to understand the external causes of emotions. In the second level (5–9 years), children realise that emotions can be caused not only by external, but also by internal psychological phenomena (for example, beliefs, memories, or expectations). In the third level (8–11 years), children develop the understanding that two different emotions can be experienced simultaneously and that morality affects one's emotions. Additionally, in the third level, they learn to regulate their emotions by means of cognitive strategies (Pons & Harris, 2005; Pons et al., 2004; Rocha et al., 2015). Due to the fundamental role of emotion comprehension, it seems important to study training programmes aimed at the development of emotion comprehension in preschool and elementary school children (Campayo-Munoz & Cabedo-Mas, 2017). Musical training is one of the extracurricular activities that can bring a positive contribution to emotion comprehension development (Blasco-Magraner et al., 2021; Schellenberg & Mankarious, 2012; Gavrilova et al., 2025).

Musical training can support the development of emotion comprehension in children, as music is intricately linked with experiencing, expressing, and perceiving emotions (Blasco-Magraner et al., 2021; Ailamazyan, 2023). There are a number of reasons to consider the association of musical training to emotion comprehension development. Firstly, emotion comprehension involves both cognitive and emotional components (Troshikhina & Manukayan, 2016). Meanwhile, musical training promotes children's cognitive development (Roman-Coballero et al., 2020; Sala & Gobet, 2020; Lu et al., 2025), which, in turn, supports emotion comprehension development (Von Salisch et al., 2013; Neves et al., 2025). For instance, it was revealed that non-verbal intelligence is associated with emotion comprehension on all three stages of the emotional development process (Albanese et al., 2010). Secondly, during musical training, children often have to explore their own emotions and the ones of the characters of the music piece. Music teachers may initiate discussions about the emotions evoked by a piece of music and the appropriate mood for performance, thereby enhancing emotional vocabulary and understanding how individuals relate their own emotions to those of others (Edgar, 2013). Thirdly, the effect of musical training on the emotion comprehension development can be explained by the following: In the process of musical training, children develop the ability to analyse the specifics of musical expression, pace, rhythm, and tonality of the music. This ability is also essential for the understanding of different aspects of prosodic speech components that serve to express one's emotions (Grosbras et al., 2018). Fourthly, a group format of musical training offers a conducive environment for emotion comprehension development, enabling shared emotional experiences and observation of the emotions of peers in the common context. Children can engage in discussions about others' emotions, facilitating comparisons with their own emotional experiences (Campayo-Munoz & Cabedo-Mas, 2017; Edgar, 2013; Varadi, 2022). Some authors also indicate that the association between musical training and the development of emotion comprehension might manifest itself more clearly if children started musical training at an earlier age

and depends on the period of the training (Blasco-Magraner et al., 2021; Schellenberg & Lima, 2024).

The association between musical training and emotion comprehension development seems natural, but there are few data supporting the existence of such association in children. Moreover, outcomes of some studies did not confirm it (Blasco-Magraner et al., 2021; Campayo-Munoz & Cabedo-Mas, 2017). For example, there was no influence from 10 months of musical training on emotion comprehension in 8–9-year-old participants who began the training programme with a high level of prosocial skills (Schellenberg et al., 2015). However, the children with poor prosocial skills registered in the beginning of the training programme, demonstrated that the musical training improved their emotion comprehension (Schellenberg et al., 2015). Habibi et al. compared children aged 6–7-years old children who had received 3 weeks musical training with two other groups of children. One of these had been involved in high intensity sports training but not musical training, and the other had not been involved in any systematic training at all (Habibi et al., 2014). No significant differences were registered in the participants' recognition of emotional states by viewing pictures of eyes, nor in the empathising with the emotions of others. It could be assumed that 3 weeks were not enough for the effect of the training to develop, though. It has been shown that 7–8-year-old children that had spent at least 8 months learning music, could recognise emotions better than their peers who did not receive such training (Schellenberg & Mankarious, 2012). However, this association disappeared when the children's IQ was controlled in the analysis. Another study found that the participation of elementary school children in a 24-week training programme that included a weekly musical performance group stimulated the development of the ability to perceive emotions, and reduced physical and verbal aggression, but had no statistically significant effect on the level of total emotional intelligence (Kim & Kim, 2018). Hence, empirical data on the association between musical training and emotion comprehension in children remains contradictory and inconclusive.

Thus, theoretical analysis supports the assumption that musical training can contribute to the development of emotion comprehension. Still, there are few sufficient empirical data confirming this association, and previous research has brought controversial results (Schellenberg & Lima, 2024; Campayo-Munoz & Cabedo-Mas, 2017; Blasco-Magraner et al., 2021). This is why the goal of this research was to study the association between long-period systematic musical training and the development of emotion comprehension in children.

Our research question was: Did the development of emotion comprehension within a year (from 6–7 to 7–8 years) differ between the group of children who received systematic musical training and the group of children who did not receive any training? This study involved children who received musical training at the music school for two years. This training programme included individual piano classes twice a week, group choir singing once a week, and group solfeggio class once a week. Such a music programme for children is widespread in Russia. Also, children usually start such musical training in a music school about age 6. Thus, the results of the study may be relevant for programmes of many music schools.

Methods

Participants

The study sample consisted of 44 children. There were two groups of children, 22 participants in each group (5 boys and 17 girls). One group had musical training and the other did not receive any training. At the beginning of the study (Time 1), participants were 6–7 years old ($M = 79.4$ months, $SD = 4.14$ months). In both groups, about 90% of the mothers had a higher education, and 75% of the families reported the average level of income and 25% above the average level of income.

The group with musical training consisted of children who received musical training for about two years. Their musical training curriculum comprised individual piano classes twice a week, group choir singing once a week, and group solfeggio class once a week. Each class lasted 45 minutes. All the children in the group with musical training were pupils of the same music programme at a specific music school. By Time 1, the participants had been receiving this musical training for approximately one year. So, at Time 2 (one year later), these children had been receiving musical training for approximately two years. All these children did not receive any other training except music. The group with no training consisted of children who did not receive any training.

In both groups, all children first attended a kindergarten that provided compulsory music classes, as well as sports, dancing, math, and literacy training (Veraksa et al., 2019). Later, at school, they also had a choir class once a week.

Procedure

There were two stages of the study with a difference of one year. Both stages (Time 1 – T1 and Time 2 – T2) took place in October–November. At T1, all the children were 6–7 years old and it was their last year in kindergarten. One year later, at T2, all children had already spent 2–3 months in the first school grade. Emotion comprehension was assessed at T1 and at T2. At T2, in addition to the second children's assessment, caregivers completed a questionnaire. Assessment took places in a music school and in kindergartens (at T1) or schools (at T2).

Figure 1 illustrates the formation of the sample. At T1, 64 children from the music school and 516 children from kindergartens participated in the emotion comprehension assessment. At T2, there were only 36 children continuing musical training out of 64. Twenty-two (22) out of 36 children received only musical training. These 22 children formed the group with musical training. There were 312 out of 516 children in kindergartens who participated in the assessment at T2. Then, based on the data from the questionnaire for caregivers, 22 children out of 312 were selected. These participants were selected in such a way that each child who received musical training formed a pair with another child of the same age, sex and family socioeconomic status but with no musical training or another extracurricular activity (group with no training).

At both T1 and T2, the assessment was conducted by specially trained testers with each child individually, in a quiet room familiar to the children. The assessment took

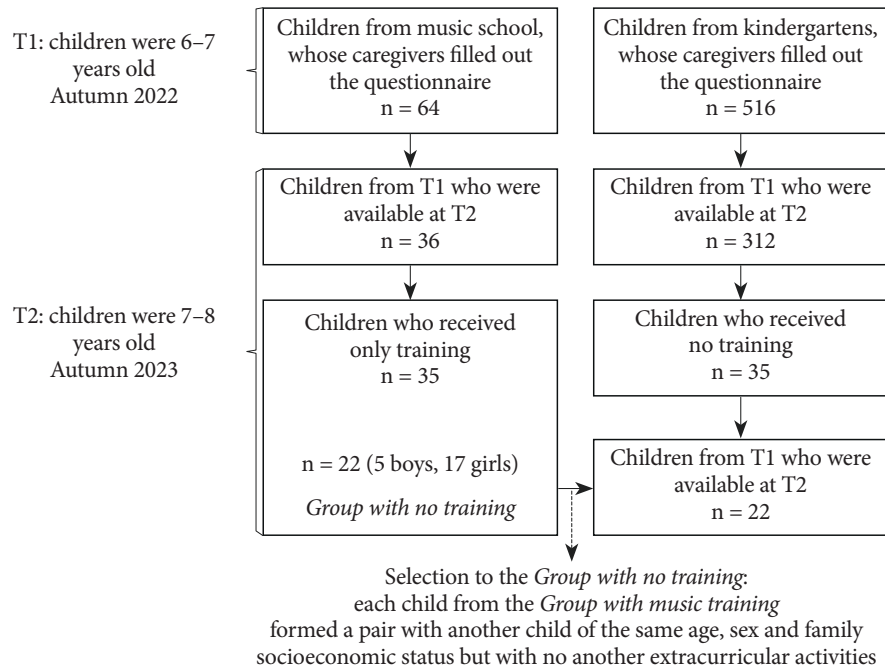


Figure 1. Formation of the sample

10–15 minutes. During the assessment a child was allowed to stop the procedure if for some reason he or she did not feel like continuing. The assessment was carried out with each child in the morning, between 8 and 11 am.

Methods

The Russian version of the Test of Emotion Comprehension (TEC) (Pons & Harris, 2000; Veraksa et al., 2021) was used to assess emotion comprehension in children. The test material was an illustrated story book separately for girls and boys. The experimenter read the story to a child and the child was required to indicate the appropriate emotion for each story (e.g., “How is this boy/girl feeling? Happy, just all right, angry or scared?”) by pointing to one of four different facial expressions. The TEC assesses three hierarchical levels of emotion comprehension: external, mental, and reflexive. The external level focuses on the ability to recognise emotions, to understand the external causes of emotions, and the impact of desires on emotions. The mental level concerns the comprehension of the role of beliefs and memories in emotions, as well as the comprehension of hidden emotions. The reflexive level is the most complex and evaluates the comprehension of mixed feelings, the possibilities of emotion regulation through cognitive strategies, and the influence of moral self-reflective rules on emotions. For each level, the score could range from 0 to 3. The total score in the TEC expressed by the sum of scores at each level, and could range between 0 and 9.

A questionnaire for caregivers was used to investigate the involvement of pre-schoolers in extracurricular activities and sociodemographic data. Caregivers were

asked to indicate which activities their child participated in, such as music, drawing, dancing, sports, math and literacy, foreign language, chess, or any other training specified by caregivers. For each extracurricular activity, caregivers were asked to specify the frequency of classes per week, duration of one class in minutes, and the duration of participation in months. Also, caregivers were asked to select the appropriate option to describe family income level (“below average”, “average”, or “above average”) and the level of maternal education (“school education”, “secondary vocational education”, “bachelor’s”, “master’s”, “Ph.D.”), with the option to provide an alternative response if necessary.

Data Analysis

Data analysis was performed using Jamovi version 2.0.0.0. The Shapiro-Wilk test (W) showed that the distribution of the majority of variables departed significantly from normality ($p < .01$) (see Table 1). Based on this outcome, the non-parametric Mann-Whitney test was used.

The Mann-Whitney-test (U) was used to assess differences in the emotion comprehension at T1, at T2, and emotion comprehension development within a year (Delta) between the group with musical training and the group with no training. The significance level was set at $p = .05$.

Table 1

Descriptive statistics for the group with musical training and the group with no training and comparison of the groups

	Group with musical training	Group with no training	Shapiro-Wilk Test		Mann-Whitney Test	
	$M \pm SD$	$M \pm SD$	W	p	U	p
TEC External, T1	2.524 ± .602	2.810 ± .512	.765	< .001	160.500	.058
TEC Mental, T1	1.714 ± .717	1.714 ± .902	.824	< .001	211.500	.811
TEC Reflection, T1	.952 ± .740	1.381 ± .865	.952	.077	161.500	.116
TEC Emotion, T1	5.190 ± 1.470	5.905 ± .578	.960	.149	154.500	.092
TEC External, T2	2.818 ± .395	2.591 ± .503	.750	< .001	187.000	.106
TEC Mental, T2	2.045 ± .486	.864 ± .560	.819	< .001	36.000	< .001
TEC Reflection, T2	1.500 ± .859	1.545 ± .739	.877	< .001	226.500	.704
TEC Emotion, T2	6.364 ± 1.177	5.000 ± 1.024	.975	.457	95.000	< .001
TEC External, Delta	.286 ± .717	-.190 ± .602	.946	.048	144.000	.030
TEC Mental, Delta	.333 ± .730	-.857 ± .964	.917	.005	78.500	< .001
TEC Reflection, Delta	.524 ± 1.078	.143 ± 1.108	.966	.232	183.000	.333
TEC Emotion, Delta	.143 ± 1.852	-.905 ± 1.670	.934	.018	94.000	.001

Note. Source — Authors

Results

It was revealed that at T1, the group with musical training and the group with no training did not differ in their general level of emotion comprehension (TEC Emotion, T1) nor in other hierarchical levels (TEC External, T1; TEC Mental, T1; TEC Reflection, T1) (see *Table 1*). This outcome provides the ground for a conclusion that the differences in emotion comprehension development within a year were not related to its initial level.

Differences were found in the emotion comprehension development within a year (see *Table 1*). Children from the group with musical training demonstrated a growth over a year of the ability to understand external causes of emotions (TEC External, Delta), the ability to understand mental causes of emotions (TEC Mental, Delta), and the general ability to understand emotions (TEC Emotion, Delta), while in the group with no training, their level decreased.

Discussion

The present findings documented a positive association between musical training and emotion comprehension development over a period of a year. Children who received musical training demonstrated within a year (from 6–7 to 7–8 years) more significant dynamics in the development of the ability to understand external causes of emotions and the ability to understand mental causes of emotions.

It was revealed that the ability to understand external causes of emotions increased (within a year: from 6–7 to 7–8 years) more in children in the group with musical training than in children in the group with no training. How could musical training affect this level of emotion comprehension? Often, in the initial stages of music education, a child performs short music pieces with expressive names (such as “Twinkle Twinkle Little Star” or “Mary Had a Little Lamb”) or short songs with easily understandable lyrics (such as popular or folk songs). Following the name or the lyrics of the song, a child can easily imagine the plot or the situation he or she is supposed to transmit musically. Thus, a child can relate the mood of the tune with a plot or an image that this music is “describing”. This is how children may develop their ability to understand external causes of emotions in the process of musical training.

It was revealed that the ability to understand the mental causes of emotions increased (within a year: from 6–7 to 7–8 years) more in children in the group with musical training than in children in the group with no training. How could musical training affect this level of emotion comprehension? Playing music implies transmitting the mood of the music piece, and the emotions associated with it. For example, when performing “Jingle Bells”, a child is required to demonstrate a cheerful and careless mood. In order to sing or play this song properly, the performer must understand these emotions. The educator asks the child to imagine the sound of Christmas bells, the Christmas sledge, a beautifully decorated Christmas tree, and other relevant scenes. These images can help to experience and transmit the joy of the holyday.

One more example: Elie Siegmeister's "Sailor's Work Song" is often studied in the first or second year of piano training. To transmit the brave and austere mood of this piece, a child needs to imagine focused courageous sailors who fearlessly face new challenges and discoveries. Thus, in the process of musical training, a child learns that one can feel certain emotions if he or she imagines or remembers the situation that causes them. Therefore, watching another musician performing a melancholic and lyrical piece, the child realises that at this very moment, the musician might imagine some sad scenes or remember something upsetting. Children learn to understand hidden emotions when they find themselves in a situation where they have to play a certain music piece and comprehend and show the appropriate emotions, but in fact, they might experience other emotions. In fact, performing art requires the ability to demonstrate the emotions expected by the audience instead of one's own. Thus, in the course of musical training, a child explores how his or her beliefs or memories can cause certain emotions in him/herself or the others, and learns to hide his or her feelings. Moreover, a child realises that other people can conceal some feelings as well (Ailamazyan & Savchenko, 2024)

No differences between T1 and T2 in understanding reflective causes of emotions were registered between the group with musical training and the group with no training. This absence of differences can be explained by the fact that at the age of 6 to 8, this ability is still in incipience (Pons & Harris, 2005; Pons et al., 2004; Rocha et al., 2015). Besides, we could assume that musical training, especially, learning to play piano, does not require the understanding of the influence of morality on emotions, nor of mixed emotions. In other words, reflective level of emotion comprehension is almost not involved in the first years of music education in children.

There are characteristics of musical training, that can contribute to the development of all levels of emotion comprehension. Firstly, the development of all levels of emotion comprehension could be stimulated by the group format of the musical training. In the current study, choir singing and solfeggio classes were taken in groups. In the process of musical training, children also regularly performed at concerts and other musical events together. Children share a joint emotional experience, and took part in the group discussion of the emotional aspects of music (Varadi, 2022; Campayo-Munoz & Cabedo-Mas, 2017). Moreover, playing a musical instrument provides a whole range of opportunities from the perspective of emotional expressiveness of performance and requires emotional responsiveness of the musician. Therefore, musical training can potentially contribute to the development of emotion comprehension (Varadi, 2022; Blasco-Magraner et al., 2021). Secondly, the development of all levels of emotion comprehension could be stimulated by practicing music at home. Usually, piano training requires playing scales and music exercises at home, as well as learning by heart and practicing pieces on a piano. Caregivers often help their children with practicing music at home. So, it is a form of systematic caregiver-child interaction which can stimulate the development of emotion comprehension (Ritcher, 2004).

It is important to note that in a year, a decrease in emotion comprehension in the group with no training was observed. This outcome is not consistent with results of previous studies on emotion comprehension development (Pons & Harris, 2005;

Cavioni et al., 2020; Veraksa et al., 2023). By 8 years, the ability to understand external causes of emotions is supposed to develop almost completely (Cavioni et al., 2020). Therefore, both groups were expected to perform the corresponding TEC tasks successfully. Meanwhile, children in the group with no training at 7–8 years performed these tasks worse than a year ago. Moreover, the same children got a lower score in the tasks assessing their ability to understand mental causes of emotions than when they were 6–7 years old. It is possible that the 7–8-year-old children from the group with no training paid less attention to the easy tasks than their peers in the group with musical training, and this attitude generated additional errors. That is, the decrease in the score for the tasks that assess the ability to understand external and mental causes of emotions could have been caused by factors not related to emotion comprehension. For example, it is possible that children who received musical training for 2 years have better developed executive function (Dolgikh et al., 2022; Rodriguez-Gomez & Talero-Gutierrez, 2022; Veraksa et al., 2023), which allowed them to concentrate better while performing the tasks. In any case, additional research is required to specify and explore the obtained results.

Conclusion

The results of the study demonstrated a positive effect of musical training on the development of emotional comprehension in children aged 6–8 years. Over the course of a year, children who regularly attended musical training showed significantly greater development in understanding both the external and mental causes of emotions compared to those who did not receive musical training. These findings suggest that musical education has significant potential for fostering children's emotional development. Therefore, integrating systematic musical training into the educational program for early school-age children can be recommended as an effective tool for the targeted cultivation and enrichment of their emotional intelligence.

Limitations

There are some limitations of the study. Firstly, the notable limitation of the study is that the sample is small. Secondly, all the children in the group with musical training participated in the same music programme at the same musical school. Possibly, that very music programme in this music school provided an especially favourable environment for emotion comprehension development. Thirdly, it is possible that the systematic participation in extracurricular activity (4 times a week for 2 years) itself, but not especially in musical training, was beneficial to the development of emotion comprehension. Further studies in this direction should be conducted considering these limitations. In particular, large and representative samples are required, as well as groups of children who receive other type of training (e.g., sports, dance, art) with the same duration and frequency. Also, comparison of groups of children from different music programmes is required. The specifics of cognitive development should also be taken into consideration together with emotion comprehension, especially executive functions and intelligence level.

Ethics Statement

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Faculty of Psychology at Lomonosov Moscow State University (approval no: 2022/18).

Informed Consent from the Participants' Legal Guardians

Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

Author Contributions

E.C.: Conceptualisation, formal analysis; data curation; writing—original draft preparation; writing—review and editing. G.G.: methodology; investigation; writing—original draft preparation; writing—review and editing. All authors have read and agreed to the published version of the manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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