

Using Transdisciplinary Interpretative Analysis to Understand the Reactions of Preschoolers to Live Classical Music

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Abstract

What researchers see in pre-school children's reactions to live classical piano music, and how this knowledge can be interpreted into a broader societal context, is the focus of this study. The specific purpose was to see how a transdisciplinary group of researchers, interpreted 32 pre-school children's reactions when listening to a short live classical professional piano concert, *Beethoven's piano sonata No. 23, Op. 57 "Appassionata", first movement*. The children were video recorded before, during and after the piano concert and were asked to draw self-figure drawings before and after the live concert. Through body language and cognitive/verbal reactions, interviews, analyses of movements and self-figure drawings, rich data from the pre-school children were analyzed and discussed. The concert affected the children in different ways and as interpreted from the narratives from the pre-school teachers; the children were absorbed and energized many days after the concert. Research collaborations across disciplinary boundaries are needed to deepen the knowledge of how music can contribute to children's creativity, curiosity, physical security, and creative learning for the coming school year. We need to look deeper into the meaning of kinesthetic musicality in pre-school contexts and more frequently ask in what ways knowledge is taught and organized.

Keywords

Appassionata, Live Classical Music, Transdisciplinary Research, Pre-School

1. Introduction

How preschool children aged 3 - 5 years perceive and react to classical piano music, performed live by a professional, is a phenomenon that we are interested in investigating for many reasons (Lilliedahl & Rapp, 2019; Aróstegui, 2016). Firstly, we see a context in which a decline in music education programs means that the importance of building new environments that cultivate knowledge about, and through, music in our public preschools and schools are going under the radar (Aróstegui, 2016). This importance, for us, relates primarily to the beneficial connections between music, child development and health. Reports from WHO (2019) show that music listening can affect children in various positive ways in relation to health development. Children of 3 - 5 years can discriminate different sounds from each other, and follow/produce rhythm and sound sequences, and it turns out that this ability is a predictor for the development of later reading ability even when one has controlled for other cognitive abilities (Anvari et al., 2002). Whether children are allowed to listen to music at home has also been found to influence the development of vocabulary (Rosenberg et al., 2022); and musical rhythm has been observed to help children develop their language use (Bedoin et al., 2016). Studies have similarly examined the relationship between musical and linguistic processing where children with language impairment have found it difficult to sort into musical processes (Jentschke et al., 2005, 2008). Music improves auditory perceptions (Chobert et al., 2014) and studies have shown that children, who have benefitted from musical lessons (compared with untrained children), are more aware and sensitive to harmonies and to the key to the music (Corrigal & Trainor, 2009). We know that musical training can increase listening skills and sound discrimination, but we are yet to discern which is a part involved in speech segmentation (Clément et al., 2013).

Many things occur within the body when children listen to music: music cultivates awareness and focus of attention in order to perceive harmonic/disharmonic structures as well as the ability to register affective components (Peretz & Zatorre, 2005). Bodily movements are organized to perform actions in harmony with a rhythm, but also to the kinesthetic sense, the sense of the movement. This is linked to auditory cognitive system activation, which allows us to predict sequences that are yet to occur. Music recognition, therefore, requires access to the perceptual memory system (Peretz & Zatorre, 2005). Compared to listening and speech skills, music conveys meaning via emotional appraisal and not via a semantic system (Trost et al., 2012), this could thereby facilitate different associative memories. Music can have a powerful emotional impact on the listener (Trost et al., 2012).

We know that musical training can engender a range of associated effects that

can foster cognitive development in children and in adults (Miendlarzewska & Trost, 2014). Enhancements in reading skills and in verbal memory have been observed in relation to music training. According to a study of monozygotic twin pairs that were discordant with regard to having played the piano (difference of more than 1000 hours of playing during the life course up to age 27 - 54), there were several intra-pair differences in brain structures—most likely due to the piano playing. There appears to be a correlation between the intensity and the duration of music activities and the structural and different aspects of functional adaptation of the brain (de Manzano & Ullén, 2018). Furthermore, musical aptitude (in particular good pitch) is predictive of working in a creative occupation in adult life and is also related to IQ (Theorell et al., 2019). It has been shown in randomized studies that music training at the age of six seems to stimulate cognitive development, (for instance Schellenberg, 2004). However, in later summaries in this field (for instance Schellenberg, 2019), it has been emphasized that we are dealing with a gene-environment interaction, that maintenance of effects of music training in small children on cognitive ability has to be supported by continued training and that music training may be of particular value to children with specific difficulties, such as dyslexia.

Given these benefits, we, unfortunately, know very little about how to motivate children to be interested in music and how to introduce them to concert halls and professional musicians since a lot of music activities are in decline in schools. In the western culture, classical concerts have also rarely been adapted to a very young audience, and music education programs are still an environment that mostly attracts those who are already inaugurated to musical communities through the family. We do know that having a musical family background plays a role in children choosing to continue with their music studies (McPherson, 2008). We do not know to what extent children who do not enjoy exposure to music from an early age are at a disadvantage in relation to opportunities and motivation to engage with music and music playing, and how this relates to their skills and talents.

Methodologically, we are interested in asking what researchers from different disciplines see in children's reactions to classical music played live, and how we can interpret this knowledge in a broader societal context. To specifically study how a professional musician plays live on an instrument, and how it is received in different ways by the children, how they take in, react, and listen, is, therefore, our research question focus. Researchers bring different lenses to the table through their disciplinary knowledge, and these could offer something of value to complement the way we conceive of musical education in the future. We argue that we need a diversified view of music itself in order to understand the course of artistic events in preschool and in school. We embrace the notion that using both visual, verbal- and non-verbal analyses may help to make young children's experiences visible. We, therefore, approach the present research in a transdisciplinary way.

2. Purpose of the Project

The purpose of the project was to see how a transdisciplinary group of researchers, interpreted 32 pre-school children's reactions when listening to a short live classical professional piano concert, *Beethoven's piano sonata No. 23, Op. 57 "Appassionata", first movement*. The children were video recorded before, during and after the piano concert and were asked to draw a self-determined picture before and after the classical live concert. The goal of this methodological exploration was to gain an understanding of how an interdisciplinary group of researchers' interpretations of 3 - 5-year old's reactions to live music could be used when discussing the role of music and music listening in future preschool and school curricula, and its possible broader associated effects.

3. Method

Three different pre-schools were asked to participate in the study. All participating schools were from the Stockholm region area. In total 32 children from five different pre-schools participated: (20 girls and 12 boys) divided into five groups.

Group A: 7 children (3 girls and 4 boys)

Group B: 5 girls

Group C: 6 children (4 girls and 2 boys)

Group D: 4 girls

Group E: 10 children (4 girls and 6 boys)

The first four concerts took place in The Black Box, at the Royal College of Music in Stockholm and the last concert took place in a somewhat smaller room (4101) in the same building. The dates for the concerts were 17 - 19 November 2021, between 9 - 12 am.

The pre-schools were chosen with a purposive selection, so different socio-economical parts of Stockholm were represented.

All five groups of children were video recorded before, during and after the piano concerts. The children were asked to listen to the live music twice and if they wanted, they could move to the music. There were no chairs in the space, and the children were asked to sit on the floor. White papers were laid out on the floor when the children entered the concert room. Before the first concert, they were told: "*Draw a picture that you feel like drawing right now*". This is called "a self-figure drawing" (Bojner Horwitz et al., 2006). When the children had finished drawing, the concert commenced. After the concert, they were given the same task: "*Draw a picture that you feel like drawing right now*". Each child had the same number of crayons and colors both times. The video recordings were made by the same camera operator. The camera operator focused on the children's movement patterns, reactions, and the relations between the participants, and a microphone recorded all the sounds in the room.

The analyses of the video recordings were made by four researchers from the following disciplines: social medicine, music and health, music history and

child pedagogy. Nine analytical features were used by each researcher as a framework for their interpretative analysis of the video recordings (See **Table 1**).

3.1. Music Choice

Ludwig van Beethoven's piano sonata No. 23, Op. 57, known as the '*Appassionata*' was suggested by the concert pianist and agreed by the researchers. It is a staple in the classical piano repertoire and is one of Beethoven's most well-known pieces. The professional pianist Professor Scheja has played it on several previous occasions, both on grand-scale musical events and for small groups of children. The piece was composed by Beethoven around 1805 and the first edition was published in 1807, in Beethoven's creative and prolific middle period. The characteristics of *the Appassionata* make it a suitable piece to play on the piano live in a room for inexperienced young listeners: Firstly, the key signature is F minor, allowing prominent use of the root of the tonic as a fundamentally very low bass note. The piece is very emotional, with wild mood swings and contrasts between minor vs. major, low notes vs. high notes, and soft vs. loud dynamics, ranging from *pianissimo* to *fortissimo*. It famously introduces Beethoven's "short-short-short-long" fate *motif*, later recycled as the main theme in the composer's fifth symphony. The total length of the sonata is about twenty-five minutes, and it consists of three movements: 1) *Allegro assai*, 2) *Andante con moto*, 3) *Allegro ma non troppo—Presto* (Holmquist, 2011; Potter, 2001; Rosen, 1988; Rosen 2002; Tovey, 1931). The *Appassionata's* rich variation in intensity, dynamics and timbres makes it a great choice, in order to expose the preschool children to the full range of live classical piano music and to analyze their reactions and kinesthetic response in relation to the music. For the purpose of the research project, it was decided that the exposure to the first movement (measure 1 - 66), was sufficient, which lasts two minutes and 50 seconds. It was played twice for each group of children.

Table 1. Nine features that were used by each researcher as a framework for the interpretative analyses of the video recordings.

<i>Eye contact</i>
<i>Facial expression</i>
<i>Body posture</i>
<i>Response to touch</i>
<i>Response to sound</i>
<i>Group interaction</i>
<i>Emotional regulation</i>
<i>Body movement</i>
<i>Verbal expression</i>

3.2. Ethics

All the staff and families gave consent to participate in the concerts.

The concert pianist, Professor Staffan Scheja gave consent to participate.

Parents whom for various reasons could not/did not want to give consent to let their children participate in the study, did not participate.

Central Ethical Review Board in Stockholm, Sweden. Dnr. 2017/1009-31/1.

4. Results

The results are divided into six parts:

- The researchers' subjective naïve analyses of the video recordings which capture the children's reactions to the live piano music concert. This comprises:
 - 1) Body language reactions;
 - 2) Cognitive/verbal reactions.
- The self-figure drawings made by the children before and after the live music concert.
- Combining self-figure drawing data with analyses from the video recordings.
- Interview with pre-school teachers' post-concert.
- Interview with pianist.
- The children's responses to the music.

4.1. The Researchers' Subjective Naïve Analyses of the Video Recordings Depicting the Children's Reactions to the Live Music Concert

1) *Body language reactions/keywords:*

- Eye movements.
- Holding ears.
- Steering movements from different body parts (the stomach, the hips, the head, and shoulders).
- Reflections and mirroring of others' movement patterns.
- High jumps in sync with the music.
- Fine finger movements in sync with the music.
- Pirouettes individually and in pairs.
- Rocking movements individually and in group of three.
- Stumbling movements both in sync with music and in sync with others.

2) *Cognitive/verbal reactions:*

- The children were sharing that they were capable of doing things such as: "I can sing", "I can dance".
- The children were sharing that they had things such as: "I have a piano at home", "My grandmother has a piano".
- The children were very eager to do the right thing, thereby asking "if we are allowed to do this or that".
- They were asking the pianist if they could play on the grand piano.
- They were very eager to check with the teachers about what to do.
- They wanted to be affirmed by their schoolmates.

4.2. Self-Figure Drawing

In the self-figure drawings, there were symbols that were repeated throughout the five different groups such as: symbols of a great piano, symbols of fingers and hands, symbols of keys on a piano, flowers, hearts, family members and flags (see **Figure 1** and **Figure 2**).

When comparing the first self-figure drawings (**Figure 1**) with the second self-figure drawings (**Figure 2**): The second drawings contained more colors than the first ones and the second drawings were bigger and easier to interpret. In summary: all the second drawings were more defined and concentrated.

4.3. Combining Self-Figure Drawing Data with Analyses from the Video Recordings

Body parts that could be seen in the second self-figure drawings were also body parts that were “active” within the children’s movements seen in the video recordings. In the video recordings, it can be observed that the children did for example play with their hands and fingers in the air and on the floor, and did steering movements with their heads. In keeping with this, hands, fingers, and heads were included more often in the second self-figure drawings.



Figure 1. Four different self-figure drawings chosen randomly from the children’s drawings made before the piano concert.

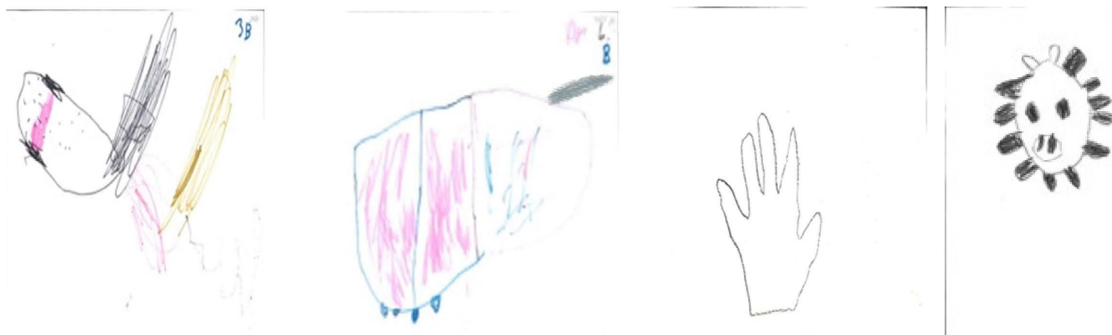


Figure 2. Four self-figure drawings from the same children as in **Figure 1**, made after the piano concert.

4.4. Interviews with Two Pre-School Teachers’ Post-Concert

In conducting interviews with the teachers, we were interested in finding out

what happened after the children had left the concert and exited the building. When the children left the music school, they were occupied with different emotions in their bodies. They were sharing sounds such as: “*Dunk-dunk*” (emotional expression-which is about how language is formed). The children were talking about different feelings that they felt in their bodies. They were told to sit still when returning to the pre-school classroom, but they struggled to do so even though they tried. The pre-school teachers shared that the children have given signals to be more occupied in the music room, and indicated that they would like to spend more time in the music room. They wanted to use the piano more than usual and wanted to listen to Beethoven 9th symphony. They wanted to recreate the same “feeling” as at the music school. Even though the teachers tried to do their best to give the children the same experience they said that they “*did not succeed*”. It remained a different experience from the music session performed live. The children expressed that they “*wanted to visit KMH (the music school) again*”.

The teachers also shared that “*the children showed quite static movements at KMH*” (which is naturally because the situation was new to them and a little bit grand and formal) but when they returned at their well-known environment at pre-school, their “*movement patterns were more nuanced*”. The staccato kind of robot-like movements observed in the videos taken at KMH was not evident at all after the concerts. The pre-school staff did also share that the children have talked a lot about the visit and even though they were “*a little bit shy*” to be at KMH—they still wanted to come back “*it was a good feeling to be there*”, and to listen to other instruments such as drums or bass guitar. Children have shown a new interest in the keyboard at the pre-school. Many of the children have started to play it rather than just “*listening to the pre-recorded sounds*” from the keyboard. The children were also intrigued afterwards about the building per se. They asked questions like: “*How long do you think this building is?*” They were also excited to see so many new instruments.

Another question that was asked of the pre-school teachers was: Have the parents reacted in any way after their children visited the concert? Teachers reported that the parents have been asking if there is any possibility for the children to visit KMH again. One parent also noticed that their son played their electric piano with more interest. However, some of the parents have not commented on the visit at KMH. The pre-school teachers reported that there had only been positive comments from parents.

When asking the pre-school managers about their dream scenario they answered: “*to be able to offer different musical instruments and to have the possibility [for the children] to listen to other music instruments that they do not encounter in everyday life*”. They also answered:

“*It would be fantastic to try different instruments and to get the opportunity to experience the music together with the children*” Furthermore, “*Instead of playing recorded music, we want to continue with live musicians coming to the*

pre-school". The teachers said: "it's going to be tough if we can't offer this again."

4.5. Interview with the Pianist

"The thing that stayed with me after the concerts was that the children listened so attentively. This was a pleasurable experience for me. It's always wonderful to play for children. The children have no preconceived notion. It can be harder to play for teens. There was a great curiosity from the children. In addition, a new arena for them, and safe to be in.

When it comes to the possible value that I think the experiences gave to 1) the children, 2) the teachers, 3) the parents were the following:

First, if you reach one child who gets an aha experience and lives on with it, you have done something useful. Getting an experience of the music live, I think is an added value. But it can be difficult to generalize.

Secondly, I think it was also exciting for the teachers to come to an Academy of Music—They may have watched TV but to come and experience the environment I think gave them something extra. It was also a kind of break from their everyday life

Thirdly, it is hard to know about the reactions of the parents that were not participating. That the children might come home and talk about the experience...surely the experience can spill over to the parents.

An event that stayed with me is when the kids (from a school out of town) came up and almost hung over me and wanted to try playing the grand piano. It was a strong event. The children were very curious and fearless, almost pushing me away from the chair.

The wishful progress of the project is if we invite preschool classes on a regular basis in the same way as we did, I think that can bring with it many important aspects. Also provide added value, to see view the school.

Also, for performing musicians to meet children and see that they make an effort for future generations. I would like to put this in a system in some way.

*I did not immediately notice the children's reactions because I was focused on the show, but the piece of music contains great drama and virtuosity, so it was an exciting choice of piece, *Appassionata*".*

4.6. The Children's Response to the Music

The *Appassionata* is quite an emotionally charged piece of music, characterized by sudden mood swings and outbursts in dynamics. When the pianist played louder, several of the children reacted instinctively by covering their ears. The children were noticeably more active when the music was performed for the second time. A girl in Group 1 danced to the music while she simultaneously covered her ears. Two boys stood up and moved rhythmically and theatrically to the music. The children's bodily movements and dancing intensified as the music became more vivacious and dynamically louder. In Group 4, a girl reacted to the music by standing on her toes and attempting to dance ballet with elegance

and a straight posture. The other children in the group stood up and spun their bodies around. When the pianist played more strongly and vividly, motor kinesthetic reactions accompanied it with the children responding by moving more intensively to the music.

When the piano sonata was performed for the second time, an interesting reaction arose in one of the children. The girl who had made previous attempts to dance ballet suddenly started to jump up and down. This behavior was imitated by a girl next to her. The shift in the kinesthetic response occurred synchronously with the introduction of the second theme in the music—*Dolce*—in the relative key of Ab major (b. 35). Here, the musical phrasing changed from minor to major into a more “strutting” character that the pianist emphasized. The girl seemed to sense this musical change and reacted correspondingly. A girl in Group 4 took the hand of a girl next to her. She first made eye contact with the other girl during a virtuosic four-bar rapidly descending scale passage (b. 47-50) and then the two of them began to swing their arms and shake their heads. They continued with some frenzy when the thunderous *Mannheimer* roll set in on the piano (b. 51). The children’s kinesthetic movements were expressions of musicality and a kind of musically embodied knowledge. In Group 5, a girl spontaneously began to move her fingers in the air in a fine motor kinesthetic response to the music that she heard, as if she were playing “air piano”. A boy next to her responded by also playing “air piano” in an empathetic kinesthetic imitation but he stopped after a while whereas the girl continued practicing her fine motor skills: she sat down and played with her fingers in the air and then on her toes as if on a keyboard. This action was also imitated by the boy next to her and it continued with the two children until the music stopped. When the music was performed a second time, children also stood up. On her own initiative, the girl began to move her body rhythmically to the music when the pianist played some moving passages. She then played with her fingers in the air until the finish of exposition where the concert ended.

5. Discussion

How could the researchers’ interpretations of the 3 - 5-year old’s reactions to live music be used when discussing the use of music listening in pre-schools and what kind of possible implications and transferable skills/effects could we see? The discussion comprises reflections from the four researchers’ different expertise lenses.

Social medicine lens

First of all, there are a couple of groups that have produced movements that have sometimes turned into dance. A couple of girls who dance have probably started in ballet school and have a tendency to stand on tiptoe, etc. The movements they make are well synchronized with Staffan’s playing. We also have a resourceful boy in one of the groups with followers who demonstrate a ‘belly put’ behavior (a movement with a strong backwards leaning of the chest while

walking with feet wide apart). We also see spontaneous dance movements in the last group, especially with the one of the girls who was furthest to the right. For me, this represented aesthetics at the highest level. We have seen several examples of piano playing with both hands and feet.

Secondly, the lack of spontaneous reactions and movements in another group is worthy of comment, without us being able to provide any explanation. The role of the teacher is potentially important, but we do not know what the significance is in the groups we studied.

Child movement didactic/science lens

It's striking how incredibly sensitive children are to just about everything in the context: clothes, the room, how the teachers sit, in what order instructions are given, or when drawing or dancing takes place. From my earlier experience of working with young children and later also research concerning young children's movement, the concept of kinesthetic musicality (Theorell, 2021) emerged. It is a concept which describes a kinesthetic sensibility that is similar to our response to music, but in young children expanded to a musical physical response also to the room, the movement of a friend or a sock that can move up and down a leg.

In almost all groups, the children talked about knowing how to play an instrument, being able to sing, etc. It was one of the most recurring themes in their conversations about music in this situation. They seemed to be very fascinated about the wide range of dynamics and the level of beauty that the pianist was able to create with his knowledge, together with the piano.

The very first group seemed to have the strongest response, there is a lot to study. But also group 4 with the four girls. They eventually began to move without the influence of the adults. I think it's important that you have to dare to wait as an adult, to be curious about what is going to happen! Even if there are very subtle reactions, we are interested in these small expressions that the children create. Almost all children, with few exceptions, seem to concentrate fixedly on not to move, that they must sit still. This is of course linked to our culture, our school system, and the idea of stillness as the optimal way of concentrating. It is one of the first thing we train children in, to sit still and in silence in a circle on the floor or in a school desk. The children have really been drilled on it and you can see that they really take it seriously through the session with how they actually even hold on to different body parts with their hands to keep them still and from moving. They seem a little suspicious that they really are allowed to move when it is suggested that they can do so. However, this appears to be just like an initial courtesy, or shyness, and would surely disappear already on a second visit.

Everyone seems to react to the strength, pace, dynamics and breaks in the music, but it is more prominent and expressed by some children.

Music medicine lens

What does it mean to hold on to the body? It seems to be some kind of control

mechanism.

All of the children were more relaxed the second time. They were more secure and more connected to each other's movement. The exchange of eyes was the movement that is perhaps the most important one as asking, "am I allowed to participate"? Can I be in contact with my body? What can I do here and now? Asking someone if it is good—children at this young age value whether something is good or not.

Having an instrument at home seem to be important for many of the children.

Does it matter if the movement has sprung from the music or from imitation?

Certain movements reproduce more easily, they spread more easily in the group. It gets an echo that may have started in one child as a reaction to the music. Then it spreads further and becomes the movement of the whole group, or more children. The image's connection to the music and to the context was intriguing. Why is it important to say that you know things? How the music is expressed in the children's bodies may say something about the children's development and knowledge building. The relationship between kinesthetic sensibility and knowledge building would be interesting to follow up on later.

Music history lens

Interesting to reflect on and discuss the children's reactions and kinesthetic movements in direct connection with the musical design.

Children's "air piano-playing with fingers"

When do the children cover their ears?

When in the music do the children move the most?

When in the music do the children's reactions occur?

Is there a special element in the music that the children respond to more?

All those questions are evoked when viewing the video recordings.

We found that all children responded to the music and there was no child that wanted to leave the room. The pre-school teachers gave us information about the priming of the children that affected the children's responses. One could see that the behaviors of the children were affected by the regulations from the teachers not from the study leaders. The most creative responses were seen in the groups where the teachers did not put-up strict borders and limitations. Cultivating of pre-school children's creativity is a recognized goal in modern education but still barriers exist (Beloyianni & Zbainos, 2021).

We know that musical training can engender a range of associated effects that can foster cognitive development in children and in adults (Miendlarzewska & Trost, 2014). Researchers have also described how music in general may promote health and well-being as 1) a tool for expressing and regulating emotion (Coutinho et al., 2014), 2) a medium of communication and contact with others (Welch & Preti, 2019), and 3) a means of identity construction (Ruud, 2013), factors which assessed individually or collectively can be seen as highly relevant for the promotion of a safe and nurturing pre-school environment.

The importance that early music training may have in a life-long perspective has been illustrated (Theorell et al., 2018) in an interview study of "piano-dis-

cordant” monozygotic twin pairs. One of the members of these twin pairs had started playing the piano in early childhood and continued up to adult age whereas the other twin sibling had not. Electrocardiograms were recorded during the interview and various topics were discussed. A pronounced difference was found in the electrocardiographic recordings when one theme was discussed—why did you (alternatively not) play the piano when you were a child? A careful analysis of heart rate variability showed that the non-playing twin had a strong cardiovascular reaction while the playing twin showed no such reaction. During the other interview topics there were no intra-pair differences in the electrocardiographic recordings. This finding illustrates that the mere thinking about experience of music training during childhood may give rise to strong reactions even later in adult years.

Rhythmic entrainment, which was seen in all our groups, is interesting because the ability to identify rhythm is a skill that could support the development of executive functions such as verbal memory and reading skills (Miendlarzewska & Trost, 2014). Anvari and collaborators (2002) found in a study of four and five-year-old’s that music-making and musical competence (discrimination between similar and dissimilar musical statements, production of rhythm and melodic sequences) were reliable predictors of reading level even when cognitive ability was controlled for. This would suggest that promoting wider participation in music and activities in pre-school could have wide-reaching benefits for life-long learning and health. Pre-school teachers’ competence, time and collaborations with music institutions would be key in reaping these benefits. As Dissanayake puts it: “*Music is conceptualized as a behavioral and motivational capacity*” which we interpret as something more than a perceptual quality or a specific genre (Dissanayake, 2008).

Tuning in to the rhythm of the music with bodily movements was seen in almost all the children. However, a couple of children did not move the first time but during the second play they did respond with visible gestures and body movement in tune with the music. This indicates that exposure to music for a longer duration was beneficial. We know that time is needed to create this safety space. Creating a safe space for the children seem to be key and the children that did not spontaneous move to the music maybe needed some more time and embodied experience of being in the music context. We see in the films that the children find it easier to sit still than to move. How should we interpret these results? If we teach children not to move—what do we lose? The situation is solemn and unusual; therefore, maybe the children try to be as polite and good as they can and of course they also get a little shy and do not know what is expected of them.

The idea that many schools must be more efficient and competitive is a tendency that needs to be understood in a deeper, longer term and larger social context-perspective (Apple, 2003). Positions within music and the arts have been cut down in pre-schools and schools and this trend needs to be critically moni-

tored. We might ask: what are schools for, who benefits from the ways knowledge is taught and organized? Research collaborations across disciplinary boundaries are needed to deepen our knowledge of how live classical music can contribute to children's curiosity, physical security, and creativity for the coming school year. We suggest that we risk developing a generation of people who feel they are not allowed to move and who do not feel entirely at home in their bodies, who do not dare to play, who tend to sit still rather than dance and play (Bojner Horwitz et al., 2022). Therefore, we need more music and art-based controlled interventions where we follow pre-school children over a longer period. In this study it was evident that many children speak with such a fascination about being able to play an instrument, that they so clearly relate it to knowledge. Five minutes of live classical piano music gave them a lot to think about.; made them feel that they "could a lot of things" and "wanted to be able to make music".

6. Conclusion

This study yielded different results related to children's reactions to live classical piano music, by engaging researchers in a transdisciplinary interpretive analysis. This was carried out by researchers with expertise from music and medicine, social medicine, music pedagogy and child didactics/pedagogy. The study combined self-figure drawings, video analyses and interviews, a new approach that has provided many perspectives and ideas about children's kinesthetic, visual and auditive perception of live classical piano music. The children's movements are well reflected in their self-figure drawings where many details are related to music, instruments, and sounds. In this short live piano concert, Beethoven's piano sonata No. 23, Op. 57 "Appassionata" first movement, affected all children in different ways and as interpreted from the narratives from the preschool teachers, the children were absorbed and energized many days after the concert, and they wanted to visit the music school soon again. The meaning of kinesthetic sensibility in pre-school contexts and the ways in which knowledge is taught and organized are issues that need more focus in the future.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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