

# **Can infants dance before they walk? An experiment with eight to nine-month-old infants in parent-infant music classes**

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## **Abstract**

The present study investigated the gestural behaviour of infants in parent-infant music classes. The data was collected using three video cameras in two groups with eight to nine-month-old infants and their parents over a period of five weeks. Classes were given two times a week, resulting in recordings from 20 parent-infant music classes. In analysing the videos, a particular focus was placed on the effect of social frames and of repeated musical activities on the infants' gestural responses to the music. The paper explores the notion of infant participation in musical activities and displays of infant learning over the course of time. Furthermore, the paper discusses methodological challenges and the limitations of quantifying overt responses in order to understand infants' experiences in social music contexts.

## **Keywords**

Infants, Parent-infant music classes, musical movement, infant behavior, dance

## **Introduction**

Research on music in infancy has predominantly regarded the perception abilities of infants while relatively little attention has been directed towards infants' overt responses and attempts at producing music and responding to music. The present paper examined eight to nine-month-old infants in a parent-infant music course and their behaviour during a particular social dance activity repeated in every class. Their gestures and vocal behaviour was described before, during and after the dance activity.

Music and movement frequently seem to go together. Most of the bodily movements humans associate with music can be described as some form of dancing. According to Dalcroze's theory, music and movement are inherently social activities and musical expressions are thought of as closely related to the expression of rhythm through bodily movements (Seitz, 2005). In the Dalcroze method, musicians deepen their understanding of rhythm through interactive group activities. "The orchestration of the body involves the concatenation of bodily gestures, the juxtaposition and opposition of bodily movements in relation to emotional attitudes, as well as the use of immobility (i.e. rest) and silence" (Seitz, 2005, p. 423).

Observations of a large number of infants have suggested that between four and six months they begin to respond to music with intentional movements (Moog, 1976). "The movements were not rhythmically coordinated with the music, nor in time with it. Though

they were seldom synchronized with the music, they are rhythmical in themselves, because of their repetitive nature" (Moog, 1976, p. 40). More recent research has demonstrated that even though infants do not accurately follow a musical beat, their movements are affected by the tempo of the music. That is, they move faster to a fast beat than to a slower beat (Zentner & Eerola, 2010).

In fact, infants are surprisingly capable of perceiving beats and rhythm. Even the newborn brain habituates to a regular beat and responds when the regularity is interrupted with a silence on a skipped beat (Winkler et. al, 2009). As young as six months, infants habituate to a triple meter if they are bounced to every third beat of a metronome but to a double meter if bounced to every second beat (Phillips-Silver & Trainor, 2005). Infants are also good learners of more complex irregular rhythmic patterns. At three to six months infants can learn to discriminate irregular patterns common in Bulgarian folk music which North-American adults and children older than one year cannot discriminate (Hannon & Trehub, 2005). Thus, infants are highly capable of perceiving musical beat although their ability to demonstrate their perception through body movements is limited by their command over their movements. In fact, seven-month-old infants show that they perceive the difference when a hammer moves in synchrony to a beat or not (Bahrick & Pickens, 1995).

Enjoyment of dance and music is found in all cultures and gestures to music can be seen as interpretative of the music in a similar way as gestures to speech (Lewis, 2013). Moving to music in a social group is a form of communication or more specifically, non-verbal communication. Some researchers see the ability to communicate non verbally with another human being as an act which requires some rhythmic sensibility and use the term communicative musicality in this context (Cross and Morley, 2008; Malloch, 2000; Malloch and Trevarthen , 2009). From analyses of vocal communication between an infant and a caregiver Malloch concluded that a four-month-old infant is "capable of entering the structure of a musical game with an other, participating in a musically logical way" (Malloch, 1999, p. 47). However, very young infants do not demonstrate the same variety of behavior in organized music classes as toddlers do (Custodero, 2005; St John, 2006). The only two behaviors found in young infants according to the Flow Indicators of Musical Activities (*FIMA*) are: *Gesture* and *Adult awareness* (Custodero, 2005).

### **The parent-infant music classes**

The experiment described in this paper was done with two groups of eight to nine-month-old infants in a parent-infant music program in Iceland. The program is called Tonagull (composed of two Icelandic words having the double meaning of "precious tones" or "playful

tones") and was designed by the author of this paper. The Tonagull program has been described in a previous paper (Gudmundsdottir & Gudmundsdottir, 2011). The program has been offered continuously since 2004 with increasing enrolment rates every year. The classes are 45 minute long and are run in a prescribed sequence of elements that has proven to work well to sustain interest, affect and attention of infants under two years of age. A key element of the sequence is the introduction of a social dance near the 30-minute mark before segueing into the last minutes of "winding-down" songs and activities. In our experience, the organized group dance helps in the transition from active playing with drums and instruments into the final episode leading into the good-bye-song. The dance activity sparks the attention of fatigued infants and helps them cope with the disappointment of instruments being put away at this point. The dance activity that has been the most popular through the years is a dance designed for the very first Tonagull class, called the *baroque dance*. Although all the group dances we have designed do work as intended none of them surpasses the popularity of the *baroque dance*. For example, the music to the *baroque dance* is the most requested music by parents who want to play it at home. There is no obvious explanation why that dance is so popular but we refer to *the magic of the baroque dance* because of its consistent success through the years. In the case of a difficult or fuzzy group the Tonagull teachers rely on the baroque dance to instantly create a positive synchronous atmosphere in the group.

### **The baroque dance as an activity**

The baroque dance is accompanied by a musical piece from the CD *Croc' Baroque : chansons enfantines et musique baroque*<sup>3</sup>. The musical piece is *La sauterelle* and is 1:15 minutes long (75 seconds). In class, the dance activity is usually done two times in a row. The dance participants are lined up in two rows facing each other similar to the set up in court dances from the period of the baroque. Parents in both rows hold their infants facing forward, the two rows facing each other. Thus the parents and infants in both rows clearly see the participants in the row facing them. The distance between the rows is about four to five steps.

The dance is so simple that it takes only a little explanation to get everyone dancing within a minute. In short, the two rows take turns in walking to the beat towards the row facing them, taking a bow and backing up to their starting position. While one row is moving forward and backward the other row stands still and visa versa. The tempo is close to a normal walking pace making the pacing easy and natural to the adult participants, even those with very little experience in

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<sup>3</sup> Published by Accord label, Paris, 2002

dancing.

More specifically, the musical piece (*La Sauterelle*) is composed of 8-beat phrases. On the first 8-beat phrase, row one walks four steps forwards (beats 1-4) and four steps backwards (beats 5-8). On the fourth step forwards they bend their knees as if they are bowing to the participants facing them. As soon as row one has completed the phrase walking front and back, row two walks in the same way towards the facing row in four steps (making a bow with their knees on the fourth beat) and back in four steps on beats 5-8. This gets repeated continuously throughout the 75 seconds of the music, much to the delight of the infants. The infants seem to appreciate the excitement and predictability of the back-and-forth movement in the dance. Somewhat in a similar way as infants and toddlers get excited about swinging back and forth in a swing, facing someone who is stationary. Typically, non-walking infants are intrigued by this dance and it is, in our experience, by far the most effective way to quickly calm down and regain the interest of a group of 12-14 infants who are tired, and disappointed that the free play with musical instruments is over.

### **The experiment**

Knowing the appeal of the baroque dance we were curious to look closer at the behavior of the infants during the dancing activity. In order to achieve this we needed permissions to videotape lessons. For this purpose we invited parents of six-month-old infants to enroll in a session of 10 free classes that would run two days a week for 5 weeks. The parents who enrolled consented to video recordings of all classes. At the time of the first class, the infants were all eight months old and by the last class they were nine months old. This is during the paid parental leave period when at least one parent can be at home with the infant. Most infants were accompanied by at least one parent although in some cases both parents did show up for the class.

Two groups of parents with 14 and 16 infants each participated in the study. No infant missed more than 2 out of 10 classes due to illness or other reasons. Three cameras were placed at different angles in the classroom. A total number of 30 infants recorded in 10 sessions.

For the first eight classes the baroque dance was introduced and performed in a traditional manner, with a standard repetition making a total of two runs of the dance during each class. At the ninth class (week 5) a variation was introduced. The parents were instructed to stand completely still when the dance music started and not make any movements for the whole duration of the 75 seconds the song would play. We wanted to know what the reactions of the infants would be to the stillness of their parents who usually moved predictably back and forth during this dance activity. After the still version of the dance the

music was repeated and the parents instructed to dance normally as they had done during the first eight classes.

Video recordings of the normal version of the baroque dance were analyzed for types of behaviour in the infants. Movements and gestures were identified and labeled. The reactions to the “no dancing” condition of the activity in the ninth class for both groups were described and the infants’ behaviours compared to that in the normal versions.

## Results

The behaviour of the infants was observed on recordings that started 30 seconds before the activity was resumed with the onset of the music and ended 30 seconds after the music stopped. Individual differences were found in the types of behaviour and extent of reactions from the infants. Some infants could be described as responding with high intensity and others with low intensity. A list of behaviours detected is displayed in Figure 1. The majority of the gestures and vocalizations detected were considered positive and positive types of gestures were more frequent than negative ones.

Gestures and vocalizations detected
One leg kicking
Both legs kicking
One hand reaching gesture
Both hands reaching gesture
One hand beat approximation
Both hands beat approximation
Hands and legs all moving
Relaxed posture of content
One palm open-close
Both palms open-close
Head nodding approximating beat
Head shaking side to side
Stillness attending to facing row
Stillness attending to parent
Stillness attention indistinct
Vocalizing short call
Vocalizing long
Vocalizing short negative
Vocalizing long negative
Rubbing of eyes
Wiggling backwards discontent
General discontent

Figure 1

A clear difference was found between the infants' vocal behaviour before the music started and after the music started. In the 30 second window prior to the activity the majority of negative gestures and vocalizations took place. In summary, 16-30 seconds of the 30-second interval were characterized by negative vocalizations by three or more infants. In contrast, when the music started a vocal silence followed in all of the recordings. In some recordings there were no vocalizations during the dance activity and in others individual short vocalizations occurred sporadically and only after 30 seconds into the dance. When the music stopped there would be vocal silence for at least 10 seconds followed by multiple onsets of negative vocalizations, even crying.

The negative body language was mostly found in the 30 seconds prior to the beginning of the activity. The parents would be standing in their positions in two rows, holding their infants facing forward to the other row. Restless infants would sway backwards, rub their eyes and display the discontent that could also be heard in the accompanying vocalizations. A few infants would be still, in a content resting position. However, as soon as the music started all of the infants would initially become still and remain still and attentive for a few seconds. About half of the infants would continue to be mostly still during the whole duration of the music (75 seconds) looking interested and content, looking forward and at other participants. The other half of the infants would display varying amount of physical movements but usually only 4-5 infants (out of 14-16) would be highly active throughout the dance with hands waiving and feet kicking in the air. In general, the infants moved more when their parent stood still than when their parent was moving. It seems that they reacted with body movements when the facing row walked towards them but when their row was moving they relaxed their muscles, hands and feet dangling down.

In the "no dancing" condition, when parents were instructed to stand still when the music started rather than doing the dance steps it was observed that all vocalizations stopped immediately, just as in the dancing condition. So the music seemed to help trigger the silence rather than the movement of the parents. Interestingly, the infants behaved very similarly in the non-moving condition in the ninth class, as they would do in the regular dancing activity, remaining interested and content throughout the duration of the 75 seconds of music. Immediately, as the music stopped the infants demonstrated restlessness in their movements and produced multiple negative vocalizations. This finding was the same in both groups.

## **Discussion**

It was clear from the recordings that the music and dance activity we call the baroque dance alerted the attention of all infants and elicited positive gestures and vocalizations. This was in sharp contrast to the 30 seconds before and after the dance, which elicited negative gestures and vocalizations. It did not seem that the parents needed to be moving in order for this effect to manifest. The "non-moving" music-only condition elicited

similar reactions by the infants as when there was movement. It is not clear if the music alone had this effect or if the anticipation of dancing played a role in their reactions. It is nevertheless remarkable that over a dozen infants can stay relatively quiet and still in an apparent state of heightened alert for 75 seconds.

This resting, albeit alert state of infants in the context of a social musical activity deserves more attention and could be viewed in the context of infant studies that rely on focused attention to auditory stimuli (e.g. Trehub, 2001).

To observers of the video recordings of infants participating in the baroque dance activity it is obvious that they all enjoy the activity. Even the ones who are tired and initially in a negative mood. The infants also seem to have a sense of anticipation of what is coming. However, systematic observations of the infants' behaviour poses methodological challenges. It is not clear that quantification of movements and gestures is helpful for understanding the infants' perceptions or experiences during the activity. In future studies it may be helpful to focus on different types of reactions from infants whose responses differ in terms of intensity.

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