

7. GROUNDS OF ABSOLUTE PITCH DEVELOPMENT IN YAMAHA MUSIC SCHOOL

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Abstract: *Absolute pitch is defined as the ability to identify the pitch class of a certain given sound without the aid of an external reference pitch (Takeuchi & Hulse, 1993; Deutsch, 2002). The incidence of absolute pitch is extremely rare among the general population, respectively 1 in 10.000 people and it depends on testing conditions such as the number of identified sounds, pitch Chroma, pitch height, timbre, register or requested reaction time, and also on subjects musical training commencing and Eastern-Asian origins. The way absolute pitch develops is described by three models: the tone language theory, the early training theory and the genetic theory. The early training theory states that absolute pitch appears due to the beginning of musical lessons during a critical development period situated before the age of 6. The educational implications of this theory are revealed in the principles and activities of Yamaha Music School which employs didactic strategies that naturally develop absolute pitch. Yamaha Music School is the largest private music education system from Japan, established by Torakusu Yamaha in 1954. Up to this day it has extended in 40 countries from Europe, Asia and the American continents, as it has about 710 million students and 30.000 teachers. The present study aims to illustrate a detailed analysis of the way the learning experiences offered by Yamaha School lead to the development of absolute pitch.*

Key words: *absolute pitch, Yamaha Music School, early training theory*

1. Introduction

In the context of Western tonal musical space, absolute pitch has impressed musicians and researchers alike, due to its scarcity but also to its spectacular applications. It refers to the unique capacity of recognizing and naming the pitch of given sounds without the use of an external reference pitch (Takeuchi & Hulse, 1993; Bermudez & Zatorre, 2009; Miyazaki & Ogawa, 2006; Deutsch et al, 2006; Baharloo et al, 1998; Gregersen et al, 1999; Brown et al, 2003; Parncutt & Levitin, 1999; Deutsch, 2002; Levitin & Zatorre, 2003). The growing body of literature focused on this ability has revealed that it depends on a series of musical factors (sound register, pitch Chroma, pitch height, timbre, octave error, white/black piano key sounds) but also on factors related to the subject (age of onset of musical training, instrument specialization, timbre familiarity, genetic inheritance, tone vs non-tone native language).

Researchers have developed different strategies of accurate measurement of absolute pitch which involved naming a certain number of sounds of different timbre, register, Chroma or height, with short requested reaction time that usually varies between 2 and 6 seconds. They discovered that the accuracy of absolute pitch is significantly higher on piano sounds (Takeuchi & Hulse, 1993; Vanzella & Schellenberg, 2010; Schlemmer et al., 2005; Hsieh & Saberi, 2009) and also on sounds subjects are familiar with, or belong to the first instrument they studied at an early age (Brammer et al., 1951; Sergeant, 1969).

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They also revealed the paradox of octave error (Lockhead & Byrd, 1981; Takeuchi & Hulse, 1993) which shows that absolute pitch musicians tend to make the same number of errors as non-absolute pitch musicians, when identifying the octave of the sounds. Absolute pitch possessors seem to automatically identify the pitch Chroma, but not the pitch height. This result made some researchers (Miyazachi, 1989) suggest that identifying the pitch height and the pitch Chroma are two different mental tasks which involve totally different cerebral regions.

Many behavioral and imagistic studies (Miyazachi, 1989; Athos et al., 2007; Ross & Marks, 2009; Miyazachi & Ogawa, 2006; Bermudez & Zatorre, 2009; Schlemmer et al., 2005) have proven that absolute pitch musicians identify white-key notes more accurately than black-key notes, a result that has been explained through the nature of early music education that usually involves listening to, singing and playing musical notes mostly belonging to C major and A minor. The present study aims to explore the link between Yamaha Music School – an important music education system originated in Japan – and the development of absolute pitch – a usually rare ability which is very common among Eastern-Asian musicians. Our perspective starts by analyzing two explanatory theories of absolute pitch: the early training and the tone language theory.

2. Early Training and Tone Language as Mediators of Absolute Pitch

Absolute pitch has been scientifically explained by means of three theoretical directions: the early training theory, the tone language theory and the genetic theory. Interestingly, the high incidence of absolute pitch musicians among Eastern-Asian population may be attributable to both early training and tone language, although a specific genetic component has not yet been dismissed in this case. The early training theory suggests that absolute pitch can be acquired most easily during a limited period of development, preferably before the age of 6. This theory has been demonstrated by studies (Krumhansl, 2000; Takeuchi & Hulse, 1993; Levitin & Zatorre, 2003; Miyazaki & Ogawa, 2006; Deutsch et al, 2006; Cohen & Baird, 1990) which discovered a negative correlation between age at onset of musical training and probability of possessing absolute pitch. The smaller the age of onset of musical training, the higher the incidence of absolute pitch. More than 40% of children who start music lessons around 4 years old are highly likely to acquire absolute pitch, while less than 4% of children who start music lessons at the age of 9 or later develop this ability (Baharloo et al., 1998; Deutsch et al., 2006). Also the success rate in acquiring absolute pitch in adults is significantly lower or even non-existent (Chin, 2003; Takeuchi & Hulse, 1993).

The early training theory statistics may be explained using neurological, developmental and linguistic arguments. Some studies (Gervain et al., 2013; Chin, 2003) refer to the higher brain plasticity specific to early ages, opportune to acquiring new neural paths. Others suggest that children before the age of 6 tend to perceive sounds in an absolute manner rather than focusing on the

relations between sounds. For example, Chin (2003) referred to Piaget's cognitive development theory. According to her, during the intuitive cognitive period (ages 4-6) children are not capable to understand relations between objects (in our case musical sounds) and therefore tend to focus on individual sounds and acquire absolute pitch. If they start musical lessons later than this age, they reach the cognitive operational stage and therefore tend to focus on relations between sounds and this diverts their attention from memorizing individual frequencies.

At last, some studies (Deutsch et al. 1999; 2006; 2009; Miyazachi et al. 2012) found an important link between absolute pitch development and language development. Diana Deutsch (1999) even considered absolute pitch to be a specific function of the language. This result has been demonstrated through the high incidence of absolute pitch in native tone-language speakers. Among Eastern-Asian musicians the incidence of absolute pitch is between 45% to 80%, while among European musicians, absolute pitch incidence is rarely higher than 30%. The researchers suggest that learning a tone-language such as Mandarin, where the significance of single-syllable words depend on a specific height and a typical melodic contour, force people to exercise memorizing musical frequencies. This is why the native tone-language and absolute pitch tend to develop together, in the same cognitive manner.

3. Yamaha Music School and the Development of Absolute Pitch

In 2012 Keninchi Miyazachi (et al., 2012) observed that, in the case of Yamaha Music School, absolute pitch musicians are rather a majority than a minority. This made some researchers focus on the educational strategies implied here, strategies which seem to naturally develop absolute pitch, even though this system doesn't declare a specific intention to do so. It is interesting that Yamaha representatives highly focus on starting the musical auditory development at an early age. They also often declare that learning music is like learning a native language.

Yamaha Music School is the largest private music education system from Japan, established by Torakusu Yamaha in 1954. Up to this day it has extended in 40 countries from Europe, Asia and the American continents, as it has about 710 million students and 30.000 teachers. During lessons Yamaha Music School uses musical instruments (especially electronic pianos) manufactured by Yamaha mother corporation. In Europe, Yamaha Music School has its headquarters in Vienna, and subsidiary music schools in France, Great Britain, Spain, Austria and Italy. Yamaha music education system doesn't offer just musical training, but also scholarships for career launches in music composition and music performance. Yamaha Music School is organized on several levels, according to age and musical experience and it encourages starting musical training at the age of 2.

The declared purpose of Yamaha Music School (YMS) is to encourage listening, playing, reading and creating music in the joyful and positive manner in order to improve the quality of life. "Every child, woman and man has an

innate musical ability. This latent potential can be developed and nurtured for healthier and more enriching lifestyles. Research shows that a good music education stimulates creativity, builds confidence and enhances a child's all-round development. As adults they enjoy enhanced social recognition because of their ability to listen, read, play and express their feelings through music.”²⁰

The paradox is that, although YMS doesn't select its students on the criteria of musical talent (it is practically open to everyone), many highly accomplished performers or composers (such as Jeremy Siskind, well-known jazz pianist and composer, professor at Western Michigan University; Linda Martinez, jazz pianist and film music composer) started their career with this school. The Junior Music Program includes 3 important modules:

- **Music Fantasy** - is a course designed for 2 years-old, with consideration on language acquisition, as well as children's emotional and physical development. Engaging activities through singing, rhythm, hearing, imagination, music appreciation and other musical elements will be introduced to toddlers. Yamaha Music Fantasy Course allows toddlers to experience music the fun way. It is a great way for parents to spend quality time bonding with their little ones. The duration of the course in one year, with three group lessons per month lasting 45 minutes each.

- **Music Wonderland** – is specially designed to make 3 years-old children's initial encounter with music education fun and enjoyable and to foster interest and enthusiasm in music while feeling the fun of music by listening, singing and touching (trying to “play”) the keyboard. The course combines the dynamism of music with physical and mental activities to stimulate their musical senses and prepare them for the varieties of music education ahead. Parents are required to accompany their children during group lessons designed for up to 10 children, that last 60 minutes.

- **Junior Music Course** – aims at further developing the musical senses and skills of the young musician. Designed for 4 and 5 years-old children the course also aims to develop fundamental musical ability by learning to sing with do-re-mi and with lyrics, and to play on keyboard instruments. Emphasis is placed on listening because aural ability develops fastest in this period. The 60 minute lessons are organized for groups of 10 children accompanied by a parent.

These initial music courses are followed by advanced modules according the speed of musical development of each child. A well-known event of Yamaha Music School is the **Junior Original Concert** where Yamaha students aged 4 to 15 present their own original compositions in a highly media exposed concert.

4. Conclusions

One specific characteristic of absolute pitch is the fact that it develops during early ages. From the three explanatory theories, the early training theory and the tone-language theory seem to have a particular significance among Eastern-Asian musicians, especially for the former students of Yamaha Music

²⁰ According to the official Yamaha site www.yamaha.com

School. This school's success in acquiring excellence in auditory skills, music performance and music creativity may be partly due to the early onset of music lessons, highlighting the importance of this age for the developing the musical mind. In this case, developing absolute pitch is not the main purpose of musical training, but rather a practical instrument which musicians may find useful in reading, writing and memorizing their music.

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