THE ROLE OF A FAVORITE MUSIC INSTRUMENT TO ENHANCE COMMUNICATION IN MUSIC THERAPY

A CASE STUDY WITH A CHILD WITH FRAGILE X SYNDROME

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ABSTRACT

In this master thesis I have made a retrospective study of the role of a child's favorite musical instrument in enhancing communication. This role has been related to the concept of intermediary object.

The motivation to make this study comes from the work I did during my internship with a four-year old child with Fragile X syndrome. The investigation has a flexible design, and uses a case study strategy. The focus is on how the patient relates with the instruments and the music therapist.

The method of data analysis is inspired in the AQR instrument and it observes communicative events and interprets them from the point of view of developmental psychology.

In order to understand the difficulties the child presented at the beginning of the music therapy course, the common characteristics found in Fragile X syndrome, the assessment made by a psychological team, and the music therapy assessment made by the music therapist are described. Further, a comparison is made between Fragile X syndrome and autism, with which it shares some disabling characteristics like social avoidance and other aspects of atypical interaction.

The use of music therapy and the research done in music therapy with developmentally delayed children is summarized. And an overview of the way music therapy work with this population is presented.

The theoretical foundations of this study are the theories of developmental psychology, especially the work of Daniel Stern (1985/2000) and Colwyn Trevarthen (2001). It is explained how the kind of dialogues that are used in music therapy have been likened to early interactions between an infant and his mother. In this context, some concepts from the field of developmental psychology that have been adopted by music therapists to explain their work are explained

Then the origin of the concept of intermediary object in the field of psychiatry is explained, as well as how it has been adopted by different music therapists.

This study analyzes the empirical data focusing in the description of different vignettes that show a relevant moment in the course of music therapy with the child. This description is made by means of two categories: relationship with the instruments and relationship with the music therapist. Besides this qualitative data, also quantitative data is presented in the form of graphics that show the amount of time spent on each instrument during the music therapy course.

Next, the results of the investigation are related to the concept of intermediary object.

Finally, the limitations of the study and my reflections about the role of the music therapist are presented and new perspectives for further research are indicated.

Keywords: music therapy, Fragile X syndrome, communication, developmental psychology, favorite instrument, intermediary object

CONTENTS

CHAPTER 1: INTRODUCTION

1. PERSONAL MOTIVATION

The idea of making this study came from the work I did with Carlos (figurative name), a four-year-old child with Fragile X syndrome, who had difficulties with communication and attention. The work I did with him was based on improvisational music therapy. The most significant developments in his process occurred when I included the snare drum in the setting. This instrument became his favorite instrument. He treated it in a special way and often prevented me from playing on it. I could also observe that with the snare drum he was more motivated to investigate different musical qualities, like dynamics and rhythm, than with similar instruments like the hand drum.

All this made me reflect on the concept of "intermediary object" (IO), as it has been described by Juliette Alvin:

> Altogether, autistic children can relate to objects better than to persons. In music they can identify with a particular instrument through its tone and its shape. It may become a means of self expression, an intermediary object between them and their environment. The manipulation of this musical object is usually a source of great pleasure to the autistic child (Alvin & Warwick, 1991, p.13)

The concept of intermediary object has attracted me since I heard about it for the first time during my music therapy studies. Since then, I wondered about the role of musical instruments in music therapy.

According to Alvin (1977, 1991) a musical instrument can facilitate the communication with patients that are unable to communicate. This is especially important in the treatment of children with Fragile X syndrome, since one of the main difficulties that this children show is the establishment of interpersonal communicative interactions (Fernández Carvajal & Aldridge, 2011) . In spite of being a term that has been used by different music therapists when they describe their music therapy approach, (Benenzon, 2011; A. Oldfield, 2006; Thaut, 1984) I did not found studies or descriptions of the specific role a musical instrument can have in achieving the therapeutic goals.

On the other hand, I was interested in how humans relate, and how do we infer communicative intentions from the behaviors we observe in others. During the music therapy course with Carlos I had detected and responded to, to many communicative signs, but I did it in an intuitive way. During a music therapy improvisation there is no time to think and it is usual to react to what the patient does, without knowing exactly what has made the therapist react like this. Later, when I reviewed the videos from the sessions, I was surprised to see how we matched each other's playing and behavior in our improvisations.

2. PROBLEM FORMULATION

Based on my experience with Carlos and my wondering about the role of the snare drum (Carlos's favorite instrument) compared with other instruments in his course of music therapy, I have investigated the following statement:

In the course of music therapy with Carlos there seemed to be a connection between the use of a favorite instrument and the development of communication.

Specifically I have investigated the following questions:

1. Is it possible to relate Carlos's relationship with a favorite instrument and the development of communication?
2. In which way this use of a favorite instrument can be related to the concept of intermediary object?

The hypothesis was that the snare drum did have an important role in the enhancing of communication with Carlos.

3. METHOD

In order to answer these questions, I have made a retrospective study based on the work I did during my internship with Carlos, between October 2009 and May 2010. The objective was to investigate the role of a favorite instrument in enhancing communicative interactions studying an individual case, in order to gain understanding of the role of intermediary objects in enhancing communication in music therapy.

To answer the first part of the problem formulation I have analyzed the communicative interactions of Carlos from the qualitative and quantitative data gathered. In order to answer to the second question I have compared the results of these data with the concept of intermediary object.

The method of data analysis is inspired in the AQR instrument (Assessment of the Quality of Relationship), developed by Schumacher and Calvet (2007a)[1]. The AQR instrument "facilitates the assessment of the quality of a relationship, and focuses on how the relationship of oneself (body and voice) to objects such as music instruments and to the therapist is accepted" (p.79). This method observes the way of interacting of an individual and shows his state of development, according to the model of the development of the self of Stern.

My first idea was to use the AQR in my investigation, but finally I have developed my own method, inspired in the AQR, for two reasons:

On one hand, the AQR instrument is especially meant to analyze communicative behaviors in children that show very little ability to interact. For this reason, it makes use of video microanalysis in order to detect small signs of communication. Therefore

[1] In Chapter 2 I have explained the theoretical foundations of the AQR.

this instrument was not totally applicable to my investigation, because Carlos showed clear communicative behaviors (like the ability to imitate) from the beginning and, moreover, the quality of the video recordings of the sessions made it not possible to do a microanalysis of the interactions.

On the other hand, in order to use the AQR properly a specific course is needed, according to Schumacher (personal communication, February 22, 2011).

I have been inspired by the AQR instrument in the fact that it is theoretically founded in developmental psychology, and that it takes into account observable communicative behaviors in the child, like gaze direction, posture, way of using musical instruments, and so on. That is, I have been inspired in the way of looking at and interpreting interactions with musical instruments and with the therapist.

3.1. DATA GATHERING

Thorough the music therapy process I gathered data in two ways:

- Sessions diary: where I took note of what happened during the sessions from my point of view as therapist involved in the process.
- Video recording of all sessions: that allowed me to review the sessions and have another perspective of what happened in the session, from my point of view as an investigator.

From this raw data I have made a table for this study that shows the amount of time Carlos spent on each instrument per session[2]. The number shows the result of adding up the amount of seconds he spent playing on a single instrument during one session. Only periods of 10 seconds or more have been taken into account, because smaller periods were difficult to quantify with accuracy, and the data would not change the overall result.

3.2. DATA SELECTION

The objective of the study was to see whether there was a change in the way Carlos interacted when I introduced the snare drum in the setting. Therefore, I have divided the whole course of therapy in two main phases:

1. Sessions 1-12: After the snare drum.
2. Sessions 13-24: With the snare drum

After reviewing all the video material and the diary notes I have made a selection of "relevant moments". According to the AQR instrument, the selection of relevant scenarios depends on the specific questioning (Schumacher & Calvet, 2007a). The focus of this study is the role of the favorite instrument in enhancing communication, when compared with other instruments. Therefore, I have selected scenarios that

[2] The raw data appear in appendix 1.

show a “typical” way of interacting in a given period, but also stand out because they show an event where Carlos interacted communicatively. For this selection I have taken into consideration the observable behaviors of Carlos, as well as the feeling that I had as the therapist that this moment was “special”.

3.3. DATA ANALYSIS

In order to answer the first question, i.e., whether is it possible to relate Carlos’s relationship with a favorite instrument and the development of communication, I have firstly analyzed the amount of playing on each instrument during the whole course of therapy. The objective was to identify which instrument/s Carlos chose more often, in order to establish which one was his favorite instrument.

Secondly, I have made a qualitative analysis of the selected relevant moments. I have made a narrative description of the development of the way Carlos interacted throughout the music therapy course, using vignettes. The focus has been in two categories: how Carlos related to the musical instruments and how he related to the music therapist[3]. The objective was to gain an insight into his way of interacting in a communicative way through musical instruments.

Besides this narrative description of vignettes, I have made a table for the analysis of specific observable items, comparing four of the selected relevant scenarios that share common characteristics. These video clips have been watched and analyzed by the investigator and a blind observer.

I have elaborated a table with the items I use in the narrative descriptions: body position, gaze direction, kind of musical interaction (dialogue or accompaniment) and variability in the way of playing. In order to facilitate the analysis, each question could be answered with one (or two) of the three possible answers. The selected answer should indicate the predominant characteristic showed in the clip. Where two characteristic were equally predominant, two answers were possible.

- Body position: what is the body position of the patient in regard to the therapist? Face to face – sideways – the patient gives his back to the therapist.
- Gaze: where does the patient direct his gaze? To the therapist – to himself (himself in the mirror or his instrument) – he looks away (or averts his gaze).
- Dialogue: how does the patient relate to the therapist in a musical dialogue? He imitates what the therapist plays – he initiates a musical motive – he ignores the therapist.
- Accompaniment: how does the patient relate to the therapist through accompaniment –like playing? He joins the therapist’s playing – he attracts the therapist to his own playing – he ignores the therapist.

[3] These categories are further explained in Chapter 3.

- Variability[4]: how can the way of playing of the patient be described? Rigid (he plays the same thing with disregard of the therapist's playing) – variable (he plays different things, taking the therapist's playing into consideration) – random (he plays apparently non-sense things).

Table:

clip	**Body position**	**Gaze**	**Dialogue**	**Accompaniment**	**Variability**
1					
2					
3					
4					

Possible answers to each item:

Body position	**Gaze**	**Dialogue**	**Accompaniment**	**Variability**
Face to face	Therapist	Imitates	Joins	Rigid
Sideways	Himself	Initiates	Attracts	Variable
Gives back	Away	Ignores	Ignores	Random

This table has been filled in by two different observers:

- Myself, as therapist involved in the music therapy course with Carlos and investigator.
- A blind observer, who was a music therapist but was unaware of the focus of the study, and of the pathology of Carlos.

In order to answer the second question of the problem formulation, i.e., whether this use of the favorite instrument can be related to the concept of intermediary object (IO) as described in the literature, I have analyzed the relationship Carlos had with the snare drum. This has been made by comparing the characteristics of an IO to those of the snare drum, and comparing the use Carlos made of this instrument with the descriptions of the authors referred in the literature.

[4] This parameter is inspired the variability profile of Bruscia's IAPs (1999)

4. METHODOLOGY

4.1. DESIGN OF THE STUDY

In order to answer to the problem formulation I have used a flexible design, that is, a research design that has been mainly planned before hand, but that "unfolds" as the research proceeds (Robson, 2002). In this kind of design, the objective is to understand the case so, if initial questions are not working, they can be modified or even replaced as the research unfolds (Stake, 1995).

This strategy is often referred to as a qualitative design because it mainly makes use of qualitative data. Robson uses the label "flexible" in the sense that much less pre-specification is needed if compared with a "fixed" design, but can also include quantitative data, i.e., in the form of numbers (Robson, 2002).

In this investigation I have used a case study strategy, defined by Robson as:

> […] a well established research strategy where the focus is on a case (which is interpreted very widely to include the study of an individual person, a group, a setting, an organization, etc.) in its own right, and taking its context into account. Typically involves multiple methods of data collection. Can include quantitative data, though qualitative data are most invariably collected (Robson, 2002, p.178).

In particular I have used an individual case study strategy (Robson, 2002), where the focus has been on a detailed account of one person (Carlos), taking the context (music therapy sessions) into account.

4.2. THREATS TO VALIDITY

When deciding to use a flexible design for an investigation, questions about validity and reliability arise. While quantitative studies have developed explicit controls to assure trustworthiness, like checking inter-observer agreement, the use of quantitative measurement or direct replication, flexible designs have to rely on other means to assure validity and reliability.

In qualitative designs, the researcher is placed in the field of research as an observer and as an interpreter. He must objectively record what is happening, while simultaneously examining its meaning. To avoid the investigator's biases some validity protocols must be used.

I have used the following protocols:

- Data triangulation: the use of different methods of data collection.
- Observer triangulation: the use of more than one observer (peer debriefing).
- Theory triangulation: the use of multiple theories or perspectives.

5. PREUNDERSTANDINGS

5.1. VIEW ON HUMANS AND THERAPY

My view on humans is based in humanism. I see the human being as a whole, with feelings, thought and action integrated. In this sense, human beings are more than the sum of their parts. This vision affects the way I see therapy, that is, how I think that a therapist can help a patient, and specifically, how can music therapy help children with Fragile X syndrome, and other neurodevelopmental disorders.

Even though a particular diagnostic label can give information about the characteristics of an individual in order to give an adequate treatment, I see every human as a unique individual with distinct characteristics. This characteristics need to be taken into consideration in order to be able to help a patient. Therefore, the treatment has to be individualized and child centered.

In music therapy with this population I look for the potentialities of the child, that is to say, I focus on what the child has, and not in what the child does not have. Even though these children show difficulties in communication[5], they all have (as every human) a potential for communicative musicality (Malloch, 1999). Improvisational music therapy can help discover and develop this potential (Wigram & Elefant, 2009) using musical dialogues that resemble early interactions between mother and infant.

5.2. MY MUSIC THERAPY APPROACH

Kenneth Bruscia (1999) defines four improvisational music therapy models: Norfoff-Robbins, Alvin, Priestley and Riordon-Bruscia.

Although I do not follow any of these models, I use musical improvisation as the main technique during the music therapy sessions.

I have been inspired by Alvin´s model in three aspects:

1. The preferential use of free improvisation, understanding improvisation as “any combination of sounds and sounds created within a framework of beginning and ending” (Wigram, 2004, p.37).
2. The use of instruments as intermediate objects, an instrument with which the client identifies, and which can become a means of self expression, facilitate interpersonal communication and to mediate the client-therapist relationship (Alvin, 1977; Alvin & Warwick, 1991).
3. Using my main instrument (clarinet) in the sessions.

Amelia Oldfield studied with Juliette Alvin and his approach takes a lot of from her. Oldfield has been an inspiration to me, because of her way of working and the fact that she uses the clarinet in the music therapy sessions. From her I have taken the following ideas:

[5] Communication is considered in its broad sense, including language and non-verbal communication.

- Progress occurs through musical interactions, rather than through the client gaining an insight into his or her own difficulties.
- The priority is to help clients feel more comfortable in non-verbal communication, to then be more spontaneous in their efforts to communicate.
- To use music as a means to achieve non-musical aims.
- Music is improvised, and musical responses, vocalizations or movements of the client are used as a guide (Oldfield, 2006).

CHAPTER 2: THEORY

1. FRAGILE X SYNDROME

1.1. DESCRIPTION

Fragile X syndrome is a neurogenetic disorder, linked to the X chromosome that manifests itself as cognitive impairment, behavioral problems and physical defects.

1.1.1. HISTORY

It was discovered in 1943 by Martin and Bell, who described a family with 11 mentally retarded males and a few mildly affected females. Affected males also shared common physical features, like prominent ears, long face and enlarged testicles. Since males were more affected than females, they thought that their mental retardation might be linked to the X chromosome. In the late 1960s different investigations suggested that some genes in the X chromosome were related to intellectual function and, if mutated, could lead to mental retardation and be transmitted in an X-linked manner. In 1969 Herb Lubs described a family with three generations affected with mental retardation in males. He discovered that the X chromosome showed a "fragile site" on the distal long arm. In 1977 Grant Sutherland discovered that, in order to observe this "fragility" of the X chromosome, the cell culture media had to be deficient in folic acid. In 1991, the gene that causes FXS was discovered by Verkerk et al., and was named FMR-1 (fragile X mental retardation-1) (Visootsak, Warren, Anido, & Graham Jr., 2005).

1.1.2. GENETICS

Fragile X syndrome is caused by a dynamic mutation in the FMR1 gene, which is located on the longer arm of the X chromosome. Fragile X takes its name from the broken appearance at the bottom of the long arm of this X chromosome when cultivated in a folic acid deficient cell culture media. This broken appearance is caused by an expansion of a small part of the sequence formed by the repetition of a trinucleotide CGG, in the beginning of the FMR1 gene at Xq27.3. Individuals with full mutation have >200 CGG repeats, resulting in the absence of the FMR-1 protein (FMRP), which is responsible for the symptoms of FXS (Visootsak et al., 2005).

Fragile X syndrome is the most common inherited cause of autism and intellectual disabilities. Recent statistics indicate that 1 in 2500-4000 males and 1 in 4000-6000

females are affected (Fernández Carvajal & Aldridge, 2011). The prevalence in Spain has estimated to be between 1 in 5000-6800 males (Millan et al., 1999).

1.1.3. PHYSICAL PHENOTYPE

The classical triad of physical findings in males affected with FXS consists of macroorchidism, large or prominent ears, and long narrow face. Other findings include hyperextensible metacarpophalangeal joints, plantar and hallucal crease, and soft skin over the dorsum of hands.

FXS individuals rarely present significant medical issues or malformations, but they can present medical complications like recurrent otitis media during childhood and mitral valve prolapse during adolescence or adulthood.

1.1.4. BEHAVIORAL PHENOTYPE

The behavioral phenotype has been defined as "a characteristic pattern of motor, cognitive, linguistic and social abnormalities including also psychiatric symptoms that is consistently associated with a biological disorder" (Flint & Yule, 1994, cited in Pérez-García, Granero, Gallastegui, Pérez-Jurado, & Brun-Gasca, 2011).

The level of cognitive functioning in males varies, ranging from normal to borderline-normal functioning with learning disabilities to severe mental retardation. These declines in cognitive levels are not regression in abilities, but reflect the fact that these children do develop, but at a slower rate than other children. In general, what they present can be described as developmental delay.

The cognitive level of an individual relates to the amount of FMRP produced. Declines in cognitive ability are observable in all areas: verbal reasoning, abstract/visual ability, quantitative skills, and short term memory. Furthermore, declines in all domains of adaptive behavior, communication, daily living skills and socializing are also noted.

Males with FXS show delays in language development, gaining expressive language skills at a slower pace than receptive language skills. Speech can be characterized by "cluttering", i.e. a "rapid fluctuating rate of speech with repetitions of sounds, words, and phrases, and occasional garbled, slurred, or disorganized speech" (Visootsak et al., 2005, p.377). They can also present atypical language like perseverative expressions, repetitive speech, tangential language and delayed echolalia. Speech disfluency "reflects the effects of physiological arousal caused by hypersensitivity to social and sensory stimuli" (Visootsak et al., 2005).

While these children are often described as sweet, loving, and having a strong desire for social interactions communication is challenging for them. This is due to the fact that their nervous system is compromised (Fernández Carvajal & Aldridge, 2011). Therefore, it becomes difficult for the child to regulate his arousal levels. Boys with FXS may manifest social avoidance, especially for novel objects and situations. With familiar people they do not show this avoidance. Furthermore, FXS is one of the known

contributors for autistic spectrum disorders or autistic-like behaviors, like shyness or social anxiety, gaze aversion, and stereotypic behavior like hand flapping and hand biting (Visootsak et al., 2005).

Deficits in attention have been also observed, as well as impulsiveness. These behavioral symptoms cause many children with FXS to be diagnosed with attention deficit/ hyperactivity disorder (ADHD) (Visootsak et al., 2005).

1.2. Relation to autism

Social avoidance and other aspects of atypical social interaction are one of the most frequent and disabling characteristics found in children with FXS (Roberts, Weisenfeld, Hatton, Heath, & Kaufmann, 2007). The fact that this feature is also typical in individuals with autism has stimulated controversy regarding the association of FXS and autism (Roberts et al., 2007). The reported prevalence of autism in males with FXS ranges from 18% to 47%, depending on the diagnostic tool and sample size (Brock, H., Brock, & Hatton, 2010). Even though not all individuals diagnosed for FXS have autism, most of them (around ninety per cent) display some autistic feature, such as gaze aversion (Brock et al., 2010). Despite these similar traits with autism, social interest, perception of other people's emotions, and the quality of attachment to parents and carers may be relatively more intact (Feinstein & Reiss, 1998).

1.3. Treatment

The treatment of FXS is symptom oriented. Children with FXS can benefit from early developmental stimulation and educational programs. Early multidisciplinary intervention services like physical therapy, speech therapy, music therapy or occupational therapy are advised (Fernández Carvajal & Aldridge, 2011; Visootsak et al., 2005). Educational support can be in the form of mainstreaming in regular classes with supplemental assistance in areas of need, or more intensive and self –contained instruction with opportunities for mainstreaming for socialization (Visootsak et al., 2005).

Behavioral approaches are helpful to promote effective coping skills and reduce problematic behaviors. The child can be taught how to monitor his arousal levels, and use specific self-calming techniques before manifesting inappropriate responses.

A structured environment with reduced sensory stimulation that also provides the necessary flexibility to meet the individual needs is also advisable.

From the medical point of view, medication is available to alleviate symptoms like maladaptive behaviors, ADHD, self-injurious problems, anxiety or compulsive behaviors.

2. Music Therapy and fragile X syndrome

Even though I have not found studies that focus on the use of music therapy with Fragile X syndrome, children affected with it can benefit from similar treatments as

children with developmental disabilities, like autism. Therefore, this section will focus on the use of music therapy with developmentally delayed children, especially in the use of improvisational music therapy to enhance social communicative interactions.

2.1. RESEARCH

Even though there are many different treatments that are designed to improve social communication interactions in Autistic Spectrum Disorder (ASD), there is not sufficient evidence of their effectiveness. Interestingly, in an overview of reviews (Wheeler, Williams, Seida, & Ospina, 2008), only Risperidone, Parent Mediated Early Intervention and Music Therapy showed statistically significant improvement. Music Therapy has also been acknowledged as one of the few "novel and emerging" treatments that has reached the highest ranking in an evidence-based grading system, together with Melatonin, Acetylcholinesterase inhibitors and Naltrexone (Rossignol, 2009).

A systematic review focusing on randomised controlled trials (RCTs) and controlled clinical trials (CCTs) has compared music therapy with standard care, placebo or no treatment (Gold, Wigram, & Elefant, 2006). The study included three small studies, which evaluated short term effects of music therapy during one week of treatment. The studies showed that music therapy improved the communicative abilities, but the generalizability of these studies to clinical practice is considered limited. In this review further research is recommended, with therapy conditions that are similar to clinical practice, especially in frequency, duration and therapeutic techniques.

Some studies have reported the use of improvisational music therapy with ASD, like the study made by Edgerton (1994). This study evaluated the development of communicative abilities in eleven autistic children, and all of them showed an increase in communicative acts and responses. More recently, Kim, Wigram and Gold (2008, 2009) have investigated the use of improvisational music therapy to facilitate joint attention behaviors and non-verbal communication skills in children, and the value of music therapy in promoting social, emotional and motivational development in children with autism. Both studies have reported significant evidence that supports the use of improvisational music therapy with this population.

A recent study protocol has been designed for a RCT of improvisational music therapy's effectiveness for children with ASD (Geretsegger, Holck, & Gold, 2012). The objectives of this study are to determine if music therapy is superior to standard care in improving social communicative skills and social responsiveness, if variation of intensity affects outcome of therapy, and to determine how the development of social communicative skills proceeds after the treatment.

2.2. HOW DOES MUSIC THERAPY WORK?

Music therapy has been defined as "a systematic process of intervention wherein the therapist helps the client to achieve health, using musical experiences and the relationships that develop through them as dynamic forces of change" (Bruscia, 1997,

p.43). In music therapy different techniques can be used, like free or structured improvisation, songwriting or listening to music. In Europe there is a tradition of improvisational music therapy, where improvised musical dialogues are used to promote the development of a musical relationship between a therapist and a patient or group of patients (Wigram & Elefant, 2009). The processes that take place during musical improvisation can help individuals with ASD to develop communicative skills and social interaction abilities (Gold et al., 2006).

The theoretical foundation of the use of music therapy to help clients with communication disorders like ASD is based in the work of early infancy researchers, like Stern and Trevarthen (Gold et al., 2006). These authors have used musical terms to describe the vocal interactions between mother and child, like pitch, timbre, pulse and timing. According to these authors, children are born with an innate capacity to engage in communicative exchanges (Stern, 1985/2000; Trevarthen, 2001), what Malloch has called "communicative musicality" (Malloch, 1999). Even the more disabled because of neurophysiological disorders are sensitive in some way to the communicative expressions of others, and to the motives and emotions behind these expressions (Trevarthen & Aitken, 2001).

In music therapy, music functions as an essentially emotional, relational and motivational medium to create "interpersonal relatedness" within a systematic intervention (Kim et al., 2009). Music therapists seek to establish a meaningful relationship with the patient through shared music improvisations. The therapist identifies certain elements like pulse, rhythmic patterns, dynamics, pitch range or melodic contours, from the child's musical and non-musical behavior, and responds providing a supportive structure to attract and engage the child. These exchanges, that occur in a multimodal way, involving vocal and instrumental exchanges, as well as movements and gestures (Kim et al., 2009), have been likened to the kind of exchanges that occur between mother and infant. Certain behaviors, like joint attention, eye-contact and turn-taking, which are necessary in order to communication to take place, are also characteristic events in musical improvisation (Gold et al., 2006). These similarities between early infant-mother dialogues and musical improvised dialogues allow music therapy to become an effective means for individuals with ASD to participate in non-verbal social interactions. The motives of communicative musicality (Trevarthen & Malloch, 2000), which are present in parent-child interactions from birth, are considered to be the foundation for the healing process in music therapy (Wigram & Elefant, 2009). The development of this potential for communicative musicality can then be integrated and incorporated to everyday life engagements.

It has been noted that, despite their potential for communication, children with pervasive developmental disorders tend to be rigid and repetitive in their behavior. They seek predictability in the different experiences because it makes them feel

secure. Parents, carers and educators are aware of this necessity and the educational approach with these children normally occurs in a structured setting.

In music therapy, music itself can provide such a foundation-giving structure, and at the same time provide flexibility and unpredictability because of its characteristics. This can help children with ASD to manage situations that become less predictable (Wigram & Elefant, 2009). The role of the music therapist then, is to create a framework where the client can feel secure, and to develop a relationship with him/her.

3. DEVELOPMENTAL PSYCHOLOGY AND MUSIC THERAPY

In the field of developmental psychology, different authors have explained how the first relationships of the infants with their parents and with objects develop before they learn to talk. Since the late 1960s there has been a growing interest in the early skills of infants, and especially in their innate ability to relate with others (Malloch & Trevarthen, 2009). The nature of these interactions has attracted music therapists because of its similarities with musical improvisation. This body of knowledge on non-verbal communication is increasingly being acknowledged as an important paradigm that underpins music therapy.

In this section I am going to describe which features of early mother-infant interactions can be likened to what happens in music therapy.

Firstly, there are some concepts that have appeared in the context of early mother-infant interaction research, and that can be useful in describing what occurs in the music therapy context.

3.1. CONCEPTS FROM DEVELOPMENTAL PSYCHOLOGY

3.1.1. COMMUNICATIVE MUSICALITY

This concept was first defined by Malloch (1999). In his article *Mothers and Infants and Communicative Musicality* this author made a computer-based acoustic analysis of mother-infant interactions, taking the musical elements pulse, quality and narrative as parameters. The objective was to establish the similarities between "infant directed speech" (IDS), which is the way mothers modulate their voice to address infants, and what we generally understand as music. This way of speaking has been defined as musical, because mothers exaggerate the intonation and loudness, they make repetitions of words, and so on, in a way that resembles music. According to Malloch, Communicative Musicality "consists of the elements pulse, quality and narrative – those attributes of human communication, which are particularly exploited in music, that allow co-ordinated companionship to arise" (Malloch, 1999, p.32). These elements are defined as follows:

Pulse is the regular succession of expressive "events" through time, where events are moments that are characterized by a change in pitch, volume, or the beginning or end of a vocalization. Pulse allows us to anticipate what might happen and when might it happen.

Quality consists of the melodic and timbral contours of the vocalizations or attributes of direction and intensity in bodily gestures. Attributes of quality often occur in multimodal manner.

Narrative is the third element of communicative musicality, and is made of the combination of pulse and quality. In the same article Malloch explains that

> Narratives of individual experience and of companionship are built from the units of pulse and quality found in the jointly created gestures of vocalizations and bodily movement. Narratives are the very essence of human companionship and communication. Narratives allow two persons to share a sense of passing time, and to create and share the emotional envelopes that evolve through this shared time (p.45).

Malloch goes on and affirms that " the ability to act musically underlies and supports human companionship; that the elements of communicative musicality are necessary for joint human expressiveness to arise, and lie beneath, to a greater or lesser degree, all human communication" (p.47). The author explains that the concept of communicative musicality does not imply that mother-infant vocalizations are musical, but rather that what we normally define as music is only one particular drawing together of the elements of pulse, quality and narrative, and that these elements are intrinsic to all human communication.

Communicative musicality, then, consists in our innate abilities for being able to move sympathetically with others and to share emotions. When our ability to share these emotions is impaired, it is recognizable because the elements of communicative musicality change in a way that they are less "musical".

3.1.2. AMODAL PERCEPTION

Stern states in his revised edition of *The Interpersonal World of the Infant* (1985/2000), that infants have an innate capacity to apprehend information through one sensory modality and somehow translate it into another sensory modality. This author refers to the experiments done in the late 1970s about how infants learn about the world. The question was how a person can know that something seen, heard or touched is in fact the same thing. These investigations showed that infants have an innate ability to "perform a cross-modal transfer of information that permits them to recognize a correspondence across touch and vision" (p.48). An infant can visually recognize that the nipple the child has just touched with his mouth is the same nipple that is later shown to the child. Stern does not think that this information is experienced as belonging to any particular modality and is later translated across modalities. On the contrary, he suggests that these experiences involve an encoding into a "still

mysterious amodal representation, which can then be recognized in any of the sensory modes" (p.51). Infants experience a world of perceptual unity, in which they can perceive amodal qualities, like shapes, intensities, and temporal patterns, and they have the ability to form abstract representations of these qualities and then transpose them to other modalities.

3.1.3. VITALITY AFFECTS

In the referred book, Stern defines another term: "vitality affects". This concept is defined as those amodal qualities of experience that arise directly from encounters with people. These qualities can be described by dynamic, kinetic terms, like "surging, fading away, fleeting, explosive, *crescendo*, *decrescendo*, bursting, drawn out, and so on" (1985/2000, p.54).

Even though the term vitality affects refers to feelings, according to Stern, they are not the same as the categories of affect described by Darwin in 1892. The categories of happiness, sadness, fear, anger, disgust, surprise, interest and shame display a distinct facial display that is recognizable across cultures. But vitality affects occur both in the presence and in the absence of these categorical affects. Furthermore, one vitality affect can be experienced together with different categorical affects. For example, an "explosive" movement can be due to happiness or to anger.

Stern likens the expressiveness of vitality affects to that of a puppet show. Puppets cannot express affects by a facial signal, so the way they express affects is through the way they move and the activation contours they trace. This author also refers to abstract dance and music, where the vitality affects expressed are not related to categorical affects from which the vitality affects are derived. Here, the choreographer tries to express a way of feeling, but not necessarily a specific content of feeling.

"Vitality is ideally suited to be the subject of attunements, because it is composed of the amodal qualities of intensity and time and because it resides in virtually any behavior one can perform and thus provide a continuously present (though changing) subject for attunement" (Stern, 1985/2000, p.157).

3.1.4. PRIMARY AND SECONDARY INTERSUBJECTIVITY

Trevarthen and Aitken have defined the terms primary and secondary intersubjectivity. The first refers to the "active and immediately responsive conscious appreciation of the adult's communicative intentions" (2001, p.5). This is an inborn capacity that allows the child to be receptive to the subjective states of others.

Secondary intersubjectivity is the capacity that appears when a child is about nine months, and refers to the cooperative intersubjectivity, that is, person-person-object awareness.

3.1.5. INTERAFFECTIVITY

Stern defines interaffectivity as the process where the infant "makes a match between the feeling state as experienced within and as seen 'on' or 'in' another" (1985/2000 p.132). Infants of about nine months are capable of attributing a feeling state from another person by looking at this person. Further, they relate this feeling state to their own actual or potential feeling.

3.1.6. AFFECT ATTUNEMENT

The term "Affect attunement" is defined as "the performance of behaviors that express the quality of feeling of a shared affect state without imitating the exact behavioral expression of the inner state" (Stern, 1985/2000, p.142).

Stern states that an intersubjective exchange of affect between mother and infant of about nine months cannot occur with only the mother imitating the child's utterances. For the first six months of the child's life, the interactions between mother and infant consist in the mother imitating the child's behavior. They are true imitations of what the infant does, both in modality and in intensity. But when the child is about nine months old, the mother begins to add a new dimension to these imitations: she begins to introduce some variations, and responds in a different modality. Intuitively, the mother feels that her child has entered a new dimension where he can have an intersubjective experience. She feels that they can share their inner experiences.

Several processes must take place in order to be an intersubjective exchange:

1. The parent reads the child's feeling state from his overt behavior.
2. The parent performs a behavior that is not a strict imitation of what the infant did, but it is related in some way.
3. The infant reads this behavior of the parent as having to do with the child's own original feeling experience, and not just an imitation of his behavior.

Only then can feeling states within one person be knowable to another, and they can both know that a transaction has occurred without using language.

According to Stern, attunements have the following characteristics:

1. Some kind of matching is going on, even though there is not a faithful imitation.
2. The matching is largely cross-modal: the channel or modality of expression used by the mother to match the infant's behavior is different from the channel or modality used by the infant. For example, the intensity of the child's voice can be matched by the mother with an intense body movement.
3. What is being matched is not the behavior of the infant, but rather some aspect of this behavior, which reflects the child's feeling state.

Affect attunement can also be called "tuning".

3.2. THE LINKS BETWEEN MOTHER-INFANT INTERACTIONS AND MUSIC THERAPY

Many music therapists have likened early mother-infant exchanges with the kind of interactions that occur between a music therapist and her client. Here I will explain some of these features. This likening between mother-infant interactions and music therapy is relevant for my study because it provides a theoretical foundation for the observation of communicative interactions.

Firstly, it is important to point that, while it is true that there are similarities between the early communication between an infant and his mother and the musical interactions between a therapist and a client, the kind interaction is not the same.

> A non-verbal dialogue between a (verbally competent) mother and a newborn infant (who is verbally naïve) cannot comfortably be compared with that between a music therapist (who is a highly skilled musician) and a client, who may – or may not – be a skilled musician (Pavlicevic, 1997, p.119).

While in music therapy client and music therapist may be verbally competent, and do not need to relate through a non-verbal means of communication, this kind of interaction is the only one available in mother-infant interaction.

According to Pavlicevic what is practically helpful to music therapists is to make "descriptions of communicative mechanisms between mother and infant, and draw direct observational (rather than inferential) comparisons between these and the music therapy interaction" (1997, p.119).

The music therapist Amelia Oldfield (1995) states that people with communication difficulties are often more alert and less isolated when music is involved in the communicative interaction. According to this author, we can find an explanation of this preference for music in early forms of communication.

Firstly, the kind of speech that mothers usually use with their infants is "musical" rather than verbal. The mother exaggerates intonation and accents of certain syllables, and words or short phrases are repeated more often than in normal speech. A mother knows that her child does not understand the meaning of the words she is using, but she also knows that the child "understands" what she says in some way. The child reacts to these intonations, accents or repetitions, and can respond with similar elements. According to Oldfield, "if one believes that some communication disorders develop when a child is struggling to learn to speak, music, which is more like this earlier, simpler form of communication would be more accessible and appealing in such cases"(1995, p.227).

Another reason is that both early babbling exchanges between mother and infant and musical dialogues have in common that the sounds used can be interpreted in a variety of ways. Therefore, if a "child who is unsure about the meaning of words and what exact response is required from a spoken sentence will be more at ease using a less specific form of communication, such as music" (Oldfield, 1995, p.227).

Early vocal exchanges and musical dialogues also have in common that they have a clear structure with repeated rhythmic structures and/or patterns. This characteristic makes communicative exchanges more accessible to children with communicative disorders.

The music therapist Leslie Bunt (1994) has also likened the early processes of the child's development with the processes that occur in a music therapy course. Those processes include the development of imitation skills, turn-taking, vocalizations, looking behavior, attention, motor-skills, social skills and other aspects of non-verbal communication. This author has also adopted the concept of "affect attunement" above described, and translated it as "tuning in to the child". He describes in detail the following processes:

1. Imitation.
   Bunt explains how the mother imitates her child at the beginning, and later it is the child who imitates his mother as age increases. This author compares this imitation with the first interactions in music therapy, where usually the music therapist imitates the client's utterances during the first sessions, as a way to establish contact. He also notes that indirect observation via object also increases as the child gets older, and this is similar to what happens in music therapy, when "a direct interest in the therapist's music (a more passive response on the part of the child) predates a more indirect (active) use of instruments" (Bunt, 1994, p.92).
2. Turn taking.
   In turn-taking interactions between mother and infant the mother is sensitive to the child's patterns, and provides a frame and semblance of dialogue. She uses silences, switch-over points and other non-verbal cues to allow turn-taking interactions. This is similar with the music therapy improvisation techniques that the therapist uses to elicit communicative interactions with the client.
3. Tuning in to the child.
   Bunt refers to Stern's concept of "affect attunement" that I have described above. Pure imitation is not enough for the child to infer that the mother shares his feelings. In order to be an intersubjective exchange – a mutual exchange of feeling states – the adult has to provide something more than an imitation by matching some aspects of the child's behavior, often in a different mode or channel. Bunt translates this term as "tuning in to the child", and explains how a similar process occurs in music therapy. If a client plays something on a drum and the therapist responds by playing in a similar *tempo*, loudness, or plays those musical ideas on a different instrument, a connection will be created that "is read not simply as an imitation but as a real attempt to connect with the child's feelings" (Bunt, 1994, p.94).
4. Looking behavior.

> Looking behavior is acknowledged as an important feature in the development of cognitive as well as communicative abilities in children. Direct eye-to eye contact between two people is a rich source for communication that can sometimes be too arousing. Mothers usually address their children in an en face position, and this enriches the attachment process. In music therapy, some clients may find this contact difficult to bear, and they may avert their gaze in order to regulate arousal. In these cases, the therapist can offer an indirect way of communicating, where an instrument can be used as a common point of attention.

Another music therapist that has noted the similarities between early mother-infant exchanges and interactions in music therapy is Jacqueline Robarts (1996). She compares the use of timing in mother-infant interactions. The mother matches the length of her silences in eliciting the child's vocalization, and this makes a significant contribution in the child's social development. Likewise, the music therapist provides spaces of silence in the music in which self awareness can begin to emerge. The therapist must be sensitive to the child in order to facilitate the development of communication at the child's pace.

Wigram and Elefant (2009) compare the kind of dialogues that occur between mother and infant, to those that occur between a music therapist and a client. The deliberate use of music dialogue as therapy has been defined as "a process where therapist and client/clients communicate through their musical play" (Wigram, 2004, p.97). There are two basic forms of dialogue: turn-taking dialogues, and free-floating dialogues. In the last one, the participants play more or less continuously, responding to each other without making pauses, as in the turn-taking dialogue. The musical elements that appear in these dialogues, like harmony, rhythm, melody or dynamics, produce structured patterns of shared activity, and "create a potential for mutual experience resembling the intuitive sympathy of communication that is an essential element in the developmental process of all children" (Wigram & Elefant, 2009).

4. Intermediary Object

The concept of intermediary object has been used by many music therapists, as we will see. It is considered to play an important role in facilitating social contact with developmental disabled children.

The origins of this term come from the field of psychoanalysis and in the work with adult psychotic patients. It was adapted to music therapy, and it began to be used also with children with autism.

4.1. Origin of the concept

The concept of intermediary object (IO) was first defined by the argentinian psychiatrist, psychoanalyst and psychodramatist Javier Rojas-Bermúdez. In book *Teoría*

y Técnica psicodramáticas (Rojas Bermúdez & Moyano Facian, 1996), the authors explain how this concept arose and developed.

In 1965 Rojas-Bermúdez was working in the J.T. Borda National Hospital in Buenos Aires. He tried to apply psychodrama to highly isolated psychotic patients, who were confined in the hospital for years, and did not get psychiatric treatment nor had social contact with family members. The objective was to reestablish the communication that was lost due to their pathology and the hospitalization.

After many fruitless efforts, he discovered that by means of puppets, he could get a response from them that was not obtained when approached directly. He, therefore, defined the "intermediary object" as every object (at first a puppet) through which it could be possible to begin communication with an isolated patient, an instrument that could inter-mediate between therapist and patient.

From there on, many investigations were carried out to study this communicational phenomenon. In 1966 these experiences were presented in the 2nd International Congress of Psychodrama in Barcelona. In this congress the term intermediary object was made very popular, and many psychodramatists adopted the term, but not always its content, according to the author.

After this congress, J.L. Moreno asked Rojas-Bermúdez to write a book where he explained the experience he had related in the congress. The book appeared on 1970 in a bilingual edition with the title *Títeres y Psicodrama – Puppets and Psychodrama*, and Moreno wrote the introduction.

Rojas-Bermúdez defines the intermediary object as a concrete and real object (the puppet) for which a new function has been found: to be used as a means to reestablish the interrupted communication. It is not meant to enrich, stimulate or modify communication. If communication can be established directly, then an intermediary object is not needed.

The author describes the following characteristics of the intermediary object (IO):

1. It has a concrete and real existence. The objects that patients usually carry cannot be used as IO, because they have been charged with a relationship previously developed.
2. It is innocuous. It should not trigger *per se* an alarm reaction.
3. It can be identified at first glance and without effort.
4. It is malleable, so it can be easily used in any role play.
5. It can be implemented as a transmitter of messages once the attention of the patient has been centered, to then begin communication.
6. Once communication has been initiated, if the patient requires it, it can be easily assimilated to his physical possibilities.

7. Once incorporated into verbal and physical interactions, it can be easily adapted to the different dramatic circumstances that can appear.
8. It offers the person the possibility of being used as a prolongation of the body, as an *instrument*. In this way, many situations that are difficult to manage due to personal reasons (often having to do with sex or violence) can be solved with the IO.

The first three characteristics are indispensable for an object in order to be able to function as an IO.

Rojas-Bermúdez wondered why the patients responded to the puppet and not to the therapist, when he communicated directly. He argues that in natural communication we use many non-verbal signs that the psychotic patient has difficulties to decode. The information arrives to him split up in separate pieces that he cannot relate. Therefore, the psychotic patient eludes progressively human contact and retreats.

The type of object that the therapist chooses in order to use it as an IO depends on how many information from natural communication the patient cannot assume. If he has difficulties in getting facial expressions, a mask can be used. If he also cannot assume body information, a robe or a puppet can be used.

In order to use the IO, Rojas-Bermúdez followed these steps:

1. Isolated patient that does not respond to verbal communication and is in an acute or chronic alarm state.
2. Use of the IO by the therapist. He addresses the patient with the object on (puppet, mask, hood or robe).
3. Reaction of the patient that leads to continue using the IO, changing the IO or giving the patient a similar IO for him to interact.
4. When face to face communication is achieved, the IO is not needed anymore.

Rojas-Bermúdez also investigated the use of music as an IO. Even though music does not present all the characteristics of the classical IO (puppet, mask), the results obtained with patients with severe communication difficulties make it possible to consider it an IO. The main difference with the classical IO is the sensory medium used: visual for the classical IO, and auditory for music.

Another main difference is the complexity of the information that music transmits. The first objective of the IO was to reduce the amount of information that the patient received, and that is the reason why music was not considered to be an IO at first. But then it was observed that some patients did not respond to puppets, but they did respond to certain music, where the rhythm played an important role. After some investigations, Rojas-Bermúdez concluded that the responses obtained came from the rhythm in the music. He also deduced that the incidence of the contents was minor

because this conglomerate of *stimuli* contained in the music was filtered by the patient, and he only got the rhythmic part of the music.

Until now I have described the original usage of the concept of intermediary object as it was used in the field of psychodrama, which has afterwards been adopted by therapists from other fields. We have to keep in mind that the work Rojas-Bermúdez did was in the context of adult psychiatry, first with psychotic and later also with neurotic patients.

4.2. Intermediary Object in Music Therapy

The concept of intermediary object has been adopted by different music therapists. I will now explain how this concept has been described and used by some of them.

In the field of music therapy, the IO is normally considered to be a physical musical instrument. As we will see, some authors use the IO in a similar way as its original use, i.e., as an instrument on which the therapist plays in order to make contact with the patient. Other authors regard the IO as an instrument chosen by the patient with which he/she identifies, and in which the patient can project his or her feelings.

4.2.1. Benenzon

The argentinian music therapist Ronaldo Benenzon has developed extensively the concept of intermediary object, which plays an important role in his clinical approach. However, this approach is very different from the one I use in my music therapy practice, and therefore a complete explanation of his theories goes beyond the scope of this master thesis. Nevertheless, I will point some features of his approach in order to have a general view.

Benenzon began to develop his model in 1969. In his book *Teoría de la Musicoterapia* (2004) Benenzon explains that the concept of IO is closely related to that of ISO (sound identity), so I will first define the latter.

The ISO is defined as "energies formed by sounds, movements and silences that are employed by all human beings in ways that uniquely distinguish them from each other and the dynamic process derived from their respective discharges" (Benenzon, 2007, p.150). The principle of ISO is based in the fact that, in order to produce a communication channel between a therapist and his patient, it is necessary that the mental tempo of the patient matches the sound-music tempo expressed by the therapist. The therapist needs to "identify the patient's ISOs and balance them with those of the music psychotherapist" (Benenzon, 2007, p.151).

According to Benenzon (2004) the intermediary object is an instrument of communication capable of creating extra-physical communication channels or to make more fluid those which are rigid or stereotyped. This author points at the difference between the concept of intermediary object and that of Winnicot´s transitional object. The latter defined the "transitional object" as a special object to which a child is

attached, that is between the oral erotism and a true object-relationship (Winnicott, 1979). Benenzon argues that the intermediary object, that includes a series of transitional objects, is primarily and basically an object of communication. Developmentally, the transitional object will become an intermediary object and, therefore, only the latter can be used therapeutically.

Benenzon (2011) also points at the difference between the musical instrument as intermediary object and the puppet as defined by Rojas-Bermúdez. This author states that the sound of the puppet comes directly from the therapist, and therefore has a more intimate relationship with its human source, while the musical instrument has its own sound that characterizes it. The puppet only comes alive when the therapist decides to, but the musical instrument has its own identity and vital situation and, even if it is not played by the therapist or the patient, it can begin to vibrate when a sound is produced near it. This larger distance between the musical instrument and the music therapist allows an intimate bond with the patient's and the therapist's ISOs. Therefore, the right election of an intermediary object in the therapeutic relationship depends on the music therapist's ability to discover the sound identity of his patient (ISO).

According to Benenzon, a musical instrument can become an IO if it has the following characteristics:

1. It is easy to play.
2. It is easy to transport
3. It has great sound power.
4. It tends to expansion and not to introvertion.
5. Its musical possibilities should be of clear rhythmical and melodic structures.
6. Its sole presence represents a stimulus as an intermediary object.

4.2.2. JULIETTE ALVIN

Another music therapy pioneer, Juliette Alvin wrote in 1977 an article titled *The Musical Instrument as an Intermediary Object*. In her approach, musical instruments are seen as prolongations of the body: through contact with the player's mouth, fingers or other parts of the body, a vibration is produced. Therefore, the musical instrument can function as a "substitute for or an enlargement of the voice" (p.8).

According to this author, the intermediary object fulfills the two functions I have already mentioned:

1. As a means of projection of conscious or unconscious feelings from the patient.
2. As a means of communication between him and the therapist, who "plays to him on the instrument and thus by-passes the direct human contact" (Alvin, 1977, p.8).

Here we can see two different uses of the instrument. In the first use, the patient plays on the instrument in order to charge it with his feelings. In the second use, it is the therapist who plays on the instrument, to initiate contact with the patient. In the latter, the IO is used with patients who are unable to communicate at all. The objective here is to foster a response from the patient, similar to the way Rojas-Bermúdez used the IO.

The intermediary object needs to fulfill some characteristics:

- The patient should experience no sense of danger from the instrument.
- The patient perceives a feeling of resistance from the object that produces some physical awareness. This feeling can also give the player a sense of strength and mastery
- The patient feels an affinity with the instrument that may lead to his identification with it. Quite often the patient experiences a feeling of possession and intimacy towards the instrument.

Alvin also points the symbolic significance of musical instruments: the material in which they are made or their shape. This symbolism can help patients identify with the instrument.

The musical instruments can become a bridge between “the real and the unreal, the positive and the dream, the present and the past” (Alvin, 1977, p.10).

Elsewhere, Alvin points out that “autistic children can relate to objects better than to persons”. The manipulation of the instruments can produce great pleasure in the child, and it is beneficial because of the perceptual and motor control processes that are involved. They can identify with the musical instrument through its tone and shape, if they are free to choose the instrument, and it can become a means of self expression, “an intermediary object between them and the environment” (Alvin & Warwick, 1991, p.13).

The fact that the musical instruments offer some kind of resistance when played is considered beneficial for the child, because it stimulates his perceptual awareness. This feeling of resistance can give the child a sense of mastery and, at the same time, offer support. Examples of this kind of instruments are piano, string instruments, or drums. Wind instruments offer another kind of resistance that is also positive: the breathing resistance. Working with this kind of instruments can give an awareness of the wind entering the lungs. On the contrary, instruments like maracas, which are shaken in the air, do not give such a sense of support to an autistic child.

In order to choose the instruments to use in the music therapy setting it is important to avoid those instruments which the child could not master. If an instrument requires too much finger or blowing skills, it can cause a feeling of failure, and make the child give up.

4.2.3. OTHER MUSIC THERAPISTS

Michael Thaut (1984) has developed a music therapy treatment model for autistic children. This author describes four different treatment areas, being the most relevant for this master thesis the area of impaired socio-emotional development. In this area he suggests the use of musical instruments as intermediary objects in the basic level of treatment. Given that autistic children often reject or ignore social contact attempts by other persons, Thaut advises to initially provide an object relation. Shape, sound, and touch of the instruments will often fascinate the child, who will also want to explore them. A variety of instruments may be offered and freedom of exploration should be given, but taking into consideration that this selection and exploratory use of an instrument should be structured from the beginning to minimize motility rituals or sensory overload. If done in a therapeutically structured situation, "instruments can serve as intermediary objects between the client and the therapist, providing a potential point for mutual contact, enjoyment without grasp of abstract concepts, an satisfaction of need for self-expression" (Thaut, 1984, p.10).

Amelia Oldfield (2006) cites Alvin (Alvin & Warwick, 1991) when she explains the importance for music therapists to use their first instrument in the music therapy sessions. This author uses her clarinet regularly, and considers it an "intermediary instrument" and cites Winnicott (1972). Oldfield believes that it is not the instrument itself that provides the link between therapist and client, but its sound, and the fact that she can physically follow the child around the room. Differently from Alvin, Oldfield does not use her clarinet mainly to perform classical music.

Oldfield states that the clarinet allows her to be flexible with how much space she leaves between her and the child, because of its size and way of playing. She can change from a direct to an indirect communication, playing sometimes face to face to the child, or turning her back, or initiating or moving away from direct eye contact while the musical line continues.

This author cites various examples in the sessions were the client responds to her clarinet playing with vocalizations, which can eventually develop into words.

The physical shape of the clarinet is considered also invaluable for its capacity to provide a link between the child and the therapist, with the child holding on to the clarinet bell. She considers this contact more intimate that the one produced by piano vibrations when child and therapist share this instrument.

Oldfield also mentions that she often finds a particular instrument, activity or song that the child enjoys especially, and that enables her to engage with the child.

5. AQR INSTRUMENT

The music therapist Karin Schumacher and the developmental psychologist Claudine Calvet have developed a way of working that has its foundations in developmental

psychology. They realized that “only coordinated perception and emotional regulation through other person lead to the ability to establish interpersonal relationships and that this is the basis for any kind of development” (Schumacher & Calvet, 2007b, p.2). They have developed the AQR instrument, an instrument that serves to assess the quality of a relationship, and focuses on how the relationship of the client to objects such as music instruments and to the music therapist is accepted.

“Impairments in the development of contact and relationships are especially evident in the way the autistic child uses his body, the deficient use of his voice and the way he uses musical instruments” (Schumacher & Calvet-Kruppa, 1999, p.189). Therefore, those are the observable characteristics that can tell us the state of development of a child for the purpose of diagnostic assessment or to assess if the kind of therapeutic intervention is helping the child.

The theoretical basis of this instrument is developmental psychological knowledge, specifically the ability for emotional regulation and the development of the self, as it has been described by Stern.

The ability for the regulation of emotional processes is one of the theoretical bases of the AQR instrument.

According to Brazelton (cited in Schumacher & Calvet, 2007a), infants need to regulate their inner states of tension. The baby has four systems at his disposal in order to process and integrate stimuli:

1. The physiological autonomic system.
2. The motor system.
3. The state organizational system.
4. The attention and interactive system.

The infant tries to organize and process a stimulus to keep his inner state in balance. This balance is needed in order to stabilize his level of attention. If a stimulus is not integrated, the infant tries to achieve his inner balance first by means of motoric self-regulation. If the infant is not able to achieve this kind of self-regulation, he will react with averting and resistance, he will demonstrate physiological signs of stress and finally he will cry or suddenly fall asleep.

The caregiver has to act as regulator, in order to help the child regulate this inner tension. When inner tension is regulated and physiology stabilized, the attention and interaction system is activated. Otherwise, the child can show signs of stress that could become chronic symptoms.

Stroufe (cited in Schumacher & Calvet, 2007a) also points at the influence the caregiver has on the emotional development of the infant. The infant experiences his affects physiologically, but they need to be appropriately perceived by a sensitive caregiver who can regulate them. The child can learn to control his inner tension with

the help of the adult. The feeling of inner calm enables the infant to be attentive. Also, when the child learns that states tension can be regulated, he develops a positive attitude towards these states.

The AQR instrument analyzes the behavior of the child in order to establish in which stage of development he is. This instrument has four scales, with seven or eight modi each. These modi correspond to the development of the self as it is described by Stern. Each modus shows observable characteristics that correspond to the progressive layers of development of the self (Schumacher & Calvet, 2007a).

Each of the four scales analyzes the relationship of the child with musical instruments (IQR), the use of vocal pre-speech sounds (VQR), the physical-emotional quality of relationship (PEQR) and the relationship with the therapist (TQR).

The scale that is more relevant for my study is IQR, because it analyzes the relationship with musical instruments, and this is the topic of this master thesis.

The different modi in this scale are described as follows:

- Modus 0: Lack of contact
  There is no awareness of the musical instruments in the room. The child lacks sensory integration, and tries to overcome it with stereotypic behavior.
  Another behavior in this modus is when a pause is needed to regulate inner tension.
- Modus 1: Contact-reaction
  The child shows a short reaction to the instruments, but he is still not aware of its function. The child is also not aware of the therapist. Tactile and visual senses are not coordinated.
- Modus 2: Functional-sensory contact
  The child uses the person or instrument for his own needs. He uses the instrument in one the following ways:
    - Sensory: he licks or touches the instrument, without making any sound.
    - Destructive: the instrument is in danger of being damaged.
    - Stereotyped: monotone, unchanging or apparently meaningless playing.

  At least tactile and visual sensations are coordinated.

- Modus 3: Contact to himself / Self-awareness
  For the first time a movement becomes audible and the child connects the sound with his own action. If the child looks at the instrument, three sensations are coordinated: tactile, auditory and visual, creating the basis for the awareness of the function of an instrument.
- Modus 4: Contact to others / Intersubjectivity

The relation of the child with himself is established and this awareness finds confirmation in another person (social referencing). The instrument is played according to its function. At least three sensations are coordinated.

- Modus 5: Relationship with others (to another person) / Interactivity
  The child hears, sees, senses the other person, and reacts. Musical attunement in sound, rhythm and melodic patterns is recognized. Each player gives something and assimilates something from the other player in the form of dialogues.
- Modus 6: Joint experience / Interaffectivity
  Therapist and child share their feelings. A quantitative difference is noticeable if compared with modus 5. There is a feeling of pleasure.
- Modus 7: Verbal-music space.
  The instrument facilitates emotional changes or imaginary contents that lead to verbalizing (Schumacher & Calvet-Kruppa, 1999; Schumacher & Calvet, 2007a).

The literature I have presented in this chapter establishes the theoretical background of this master thesis.

In the section on Fragile X syndrome I have explained the general characteristics of this syndrome, in order to have an image of what were the potentialities and deficits of Carlos. This information, together with the clinical and music therapy assessments that are presented in chapter 3, gives us a clear picture of the subject of this study.

In the section on music therapy I have explained the way of working with this population and other pervasive developmental disorders. This gives a clear image of the context of the study.

In the section on developmental psychology I have explained the point of view I have used in order to observe the behavior of Carlos and to establish whether he showed intentional communicative interactions or not.

The last section has been devoted to the AQR instrument. My method of analysis is inspired in this model in the fact that it observes the communicative interactions from the point of view of developmental psychology.

CHAPTER 3: EMPIRICAL DATA

1. INTRODUCTION

In this chapter I am going to analyze the way Carlos related to me (the music therapist) and to the instruments during the course of music therapy. The objective is to show the analyzed data and seek whether this analysis can tell us the role that Carlos´s

favorite instrument (the snare drum) could have played in his development of social communicative interactions.

I have used an individual case study strategy based on the work I did with Carlos during my internship. In this retrospective study I have brought back the information from the case (diary notes and observations from video recordings), and analyzed this material focusing on the relationship Carlos established with the musical instruments and with the music therapist. Then I have analyzed the changes produced since I introduced the snare drum in the setting, and it became Carlos´s favorite instrument.

The structure of the chapter is as follows:

Firstly I will present the case and I will describe Carlos´s preliminary assessment.

In the following section I will describe the clinical method that I used in the sessions. This will give a picture of the music therapy work I did in the sessions, which improvisational therapeutic techniques I used, and how Carlos and I interrelated.

Then I will explain the analysis of the music therapy course, which will be divided in two phases: before the snare drum and with the snare drum. I will justify this division, and why do I state that the snare drum was his favorite instrument.

After that I will describe the music therapy course putting the focus on two main categories: the relationship of Carlos with the musical instruments, and his relationship with the music therapist. I will analyze those categories in the two phases in which I have divided the whole course of music therapy. In order to illustrate the narrative of what happened in the sessions I describe different vignettes that show relevant moments[6] in the process.

Besides this narration, I will use quantitative data of time spent on musical instruments, showed in graphics, which will give more information about what happened in the sessions.

2. PRESENTATION OF THE CASE

Carlos was a 4-year-old child that had been diagnosed with Fragile X syndrome (FXS) after having shown a delay in language and communication from the age of two years and six months. He had showed some autistic-like behaviors, but his characteristics did not fit with the diagnosis of autism. Therefore, a genetic test was advised, that showed FXS.

Carlos was described by his parents as being a very nice, warm and funny little boy that loved music. They were concerned about his difficulties in relating to peers and his attention problems.

[6] The selection criteria are explained in Chapter 2

Carlos attended the Public Primary School CEIP Almàssera, in Valencia (Spain). This is a mainstream school that offers several places for the inclusion of students with special educational needs. These students participate in the regular lessons with the other children, and get specific support lessons and therapy when needed.

At school Carlos attended kindergarten class (level 4 years). He shared the most of the time at school with his class mates and also received psycho-pedagogic, psychological and speech therapies. Outside school he attended the center Psicotrade (a centre for neuropsychological services) twice a week, where he received a specific treatment for children with pervasive development disorders. He also received hippotherapy on the weekends.

2.1. Initial Assessment

At the time of the beginning of the music therapy sessions Carlos´s parents brought him to Psicotrade in order to have a clinical assessment and advice from experts as for the best way of helping his child.

Carlos showed difficulties in various fields:

Communication and language

According to the examination, he had difficulties in both comprehensive and expressive language. He had idiosyncratic and repetitive speech, and echolalia. He used words and short phrases but in an unstructured way. His level of language was equivalent to 35 months of age.

His social development was scored in a level of 27 months of age. He showed difficulties in relating with peers. He approached them, but did not initiate an interaction. Carlos also showed inflexibility and disruptive behaviors, and poor eye-contact.

Psychomotor development

Carlos showed a delay in psychomotor development. He had difficulties in fine and gross motor skills (36 months of age).

Attention

He had difficulties in sustaining attention but showed selective attention to fixated interests (trains, bells and cranes). He also showed shyness and being emotionally reactive.

Behavioral features

Carlos showed obsessive behaviors towards water and to opening and closing doors as well as repetitive behaviors. He had excessive adherence to routines, like not wanting to leave the house until the garage door was closed.

Cognitive development

Even though his cognitive development was in a low average for his age, he had acquired an adequate basic learning, like number, letters, days of the week, etc.

ADOS

The Autism Diagnostic Observation Schedule (ADOS) (Lord, Rutter, DiLavore, & Risi, 1989) is an instrument for diagnosing and assessing autism that consists of structured and semi-structured tasks involving social interaction. It is used to diagnose autism and autism spectrum disorders. In this scale, Carlos scored 9, being 12 the cutoff for autism, and 7 for autism spectrum.

Taking all these data into account, Carlos was diagnosed as having Pervasive Developmental Disorder (PDD), according to DSM IV-TR (American Psychiatric Association, 2000). The psychologist considered that, because of these characteristics being also associated with children diagnosed as having Fragile-X syndrome, and being its symptoms similar to those with Autistic Spectrum Disorder (ASD), a similar therapeutic course was advisable.

Abilities

Besides his difficulties, Carlos also showed the following abilities:

- Very good spatial orientation.
- Visual and auditory memory (especially in music).
- Musical abilities.

Interview with Carlos's mother and the psycho-pedagogic team at school

Before the beginning of the Music Therapy sessions I had an interview at school with Carlos´s mother, the psychologist and the psycho-pedagogue (who was also a music therapist). At this interview his mother told me that Carlos liked music very much. He was able to recognize different musical instruments and learned the lyrics of songs easily. He also had a toy drum at home, which he could play very good. He liked to watch the community band of the village where he lived, and especially the drum players. This kind of band often plays a characteristic rhythm when they play in the street, with which Carlos was familiar, as I explain below.

Taking into account this liking for music, and that music therapy has been proved valuable in promoting social, emotional and motivational development in children with autism and other pervasive developmental disorders (Kim et al., 2009), Carlos´s mother, the psychological team and I decided that Music Therapy would be advisable for him.

2.2. Music Therapy Course

Music therapy assessment

The assessment was done by me during the first two sessions. The objective was to asses Carlos´s capacities and difficulties, as well as knowing his musical likes.

Reaction to sound and music

Carlos showed since the beginning an interest in the musical instruments. He asked me the name of every instrument and learned them easily. He also investigated the differences in sound when he played with different drum-sticks on the same instrument.

Musical activity

His favorite instrument in these two sessions seemed to be the hand drum, which he played the first times with the maracas as sticks. His interventions were brief and he stayed shortly on each instrument. The way of playing was impulsive and repetitive, with loud and fast strokes.

He also directed my way of playing, by saying which instrument to play or how to play it.

Motor skills

Carlos showed difficulties in motor coordination and balance: he stumbled often. He also dropped the drum sticks frequently when he was playing, and had difficulties in hitting the plates of the xylophone.

Abilities for communication

Carlos did not initiate interactions. He waited for me to begin, and then he repeated what I played.

His had a stereotyped and repetitive speech. He used the same phrase in the same context, regardless its appropriateness.

Carlos had poor eye contact.

Carlos´s needs

The assessment showed that Carlos had difficulties in the areas of communication, attention, fine motor skills and visual-motor coordination.

I decided to work on the following items at the music therapy sessions:

- Communication: to increase the number of interactions and his spontaneity.
- Attention: to increase his periods of concentration in one activity.
- Motor skills: to enhance his use of hands in fine movements.

Music therapy sessions

The work I did with Carlos took place between October 2009 and May 2010. The course of music therapy consisted of 24 weekly 30 minute sessions. The sessions took place in a polyvalent room at CEIP Almàssera, which was separated from the dining room by a sliding door. The space was well illuminated, but acoustic isolation was poor due to its proximity to the kitchen.

Despite not being an ideal space to carry out the music therapy sessions, Carlos did not seem to be disturbed by external noises.

All the sessions were recorded by an assistant music therapist, who moved the position and angle of the camera when needed.

Setting

Furniture:

The setting consisted of a set of shelves covered by a curtain, where the instruments were stored, two chairs, a mat, a folding screen and a mirror.

Musical instruments:

The musical instruments that where in the room when Carlos came in varied slightly from session to session. The intention was to help Carlos to be more flexible and adapt to small changes (Alvin & Warwick, 1991). The rest of the instruments were on the shelves, and Carlos knew he could take any instrument he wanted to play. The set of instruments consisted of:

- Percussion instruments (snare drum, 2 xylophones, 2 hand drums, and a cymbal) with different sticks (simple drum sticks and soft-headed mallets) and small percussion (maracas, sistrum, bell shaker).
- Flutes (a recorder and a slide-whistle).
- My clarinet.

3. Clinical Method

Children with ASD and other pervasive developmental disorders need a structured environment to feel secure, but at the same time they need to develop flexibility in order to ameliorate his way of interacting with others. This was the case of Carlos, who showed obsessive behaviors and excessive adherence to routines, and a deficit in social development.

Due to Carlos´s use of a stereotyped and repetitive speech, I decided to use a non-verbal approach, and use musical improvisation as a means to achieve a better socialization and communication. In this approach, “music is considered effective as a therapeutic medium because music contains many different levels of structure, yet provides the variability and flexibility needed to counteract the more rigid characteristics of the pathology” (Wigram & Gold, 2006, p.536). The kind of structure I provided was mainly a rhythmical one, with a stable pulse and rhythm, based on what the Carlos offered. This context can “provide security, and at the same time allow creative improvisation within the structure” (Wigram & Gold, 2006, p.537).

3.1. STRUCTURE OF THE SESSIONS

The sessions had a free floating structure. I used musical structure to provide the necessary framework to support communicative musicality as explained in chapter 2.

Since the beginning of the session I let Carlos chose the instrument he wanted to play. According to this election and to his way of playing, I choose an instrument and reacted to his music using two basic therapeutic methods: frame-working and dialoguing.

The therapeutic method of frame-working has been defined by Wigram as "providing a clear musical framework for the improvised material of a client, or group of clients, in order to create or develop a specific type of musical structure" (2004, p.118)

The use of dialoguing as a therapeutic method has been defined as "a process where therapist and client communicate through their musical play" (Wigram, 2004, p.97). According to this author there are two main forms of dialoguing:

- Turn-taking dialogues: making music together where the therapist or client(s) in a variety of ways, musical or gestural, can cue each other to take turns. This "turn-taking" style of dialogue requires one or another to pause in their playing and give space to each other.
- Continuous "free-floating" dialogues: Making music in a continuous musical dialogic exchange – a free floating dialogue. Here participants (therapist(s) and client(s) play more or less continuously and simultaneously. In their playing musical ideas and dynamics are heard and responded to, but without pause in the musical process (p.98).

After some sessions playing turn-taking dialogues, I tried to involve him in free-floating dialogues, by interrupting him, making spaces within my playing for Carlos to interject his own motives, or by waiting for a space in his music and filling in the gap (Wigram, 2004).

The only fixed section in the music therapy session was at the end, when we said good-bye to each instrument, while we put them back to the shelves.

4. ANALYSIS

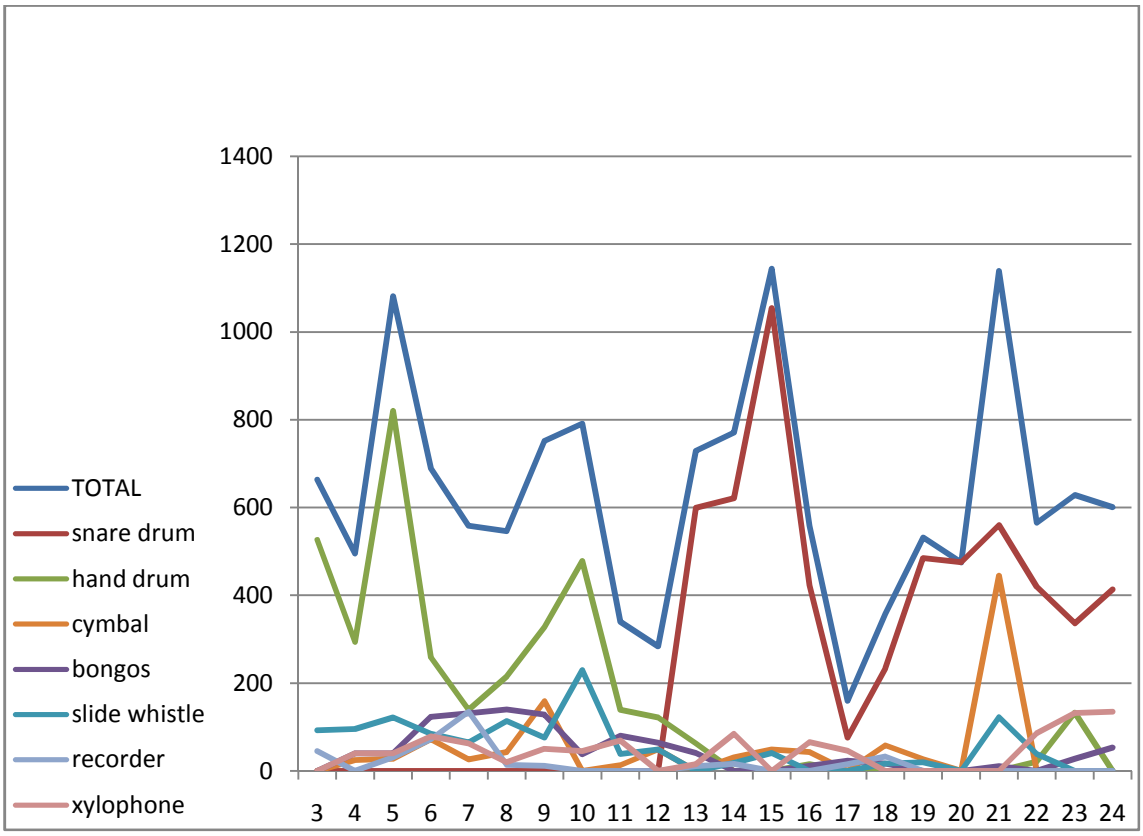
4.1. FAVORITE INSTRUMENT

The focus of this analysis is to see if there was an enhanced development of social communication interactions since I introduced the snare drum in the setting in session 13. Since then it became Carlos´s favorite instrument: the instrument he chose more often, and the one he did not want to share with me. From that moment on his use of the hand drum, which was his preferred instrument until that moment, declined significantly, as we can see in graphic 1.

Before the beginning of the music therapy course I knew from Carlos´s mother about his liking for the drums. This liking was made evident when in the first session

he began to play the hand drums and the bongos using the maracas as drum sticks. At the beginning I decided not to introduce the snare drum in the setting, due to its size and technical complexity. I preferred to use first simpler instruments, like the hand drum and the bongos, and bring the snare drum to the sessions whenever I considered it could help Carlos in achieving the therapy goals. Therefore, his favorite instrument from session 1 to session 12 was the hand drum, which he played with sticks, as if it was a drum. From session 13, when I introduced the snare drum in the setting, he played mainly on this instrument.

This preference is visible in the graphic 1:



Graphic 1

Here I have counted the seconds Carlos stayed playing with one single instrument from session 3 (after the initial assessment) and session 24. The horizontal axis represents the session number. The vertical axis represents the amount of time spent on each instrument in each session, each color representing a different instrument. The blue line represents the total amount of time spent playing instruments.

In this graphic we can see that in sessions 3 to 12 the hand drum was the instrument Carlos spent more time with. He also spent some time with other instruments, like the bongos, slide flute, recorder or cymbal. From session 13 he used mainly the snare drum in the sessions. We can see that in many sessions, the time spent on the snare

drum was very similar to the total amount of time spent playing music during the session.

4.2. PHASES OF THE MUSIC THERAPY COURSE

I have divided the whole course of therapy in two main phases:

- Phase 1 – Sessions 1-12: before introducing the snare drum in the setting.
- Phase 2 – Sessions 13-24: snare drum in the setting.

The reason for this division is that from session 13 Carlos showed a marked preference for that particular instrument, and it took an appreciable role in the way Carlos interacted in the sessions, as I explain below.

4.3. CATEGORIES ANALYZED

In order to present the data I focus on two categories: relationship with the instruments and relationship with the therapist.

RELATIONSHIP WITH THE INSTRUMENTS

In this category I have analyzed the way Carlos related with the musical instruments, i.e., the way he used them, either with musical purposes or for non-musical purposes, like toy playing.

The objective was to gather information that could tell us which was his favorite instrument, and if he used it with a communicative purpose, or it made him become isolated in his playing.

I have observed what instrument/s he chose to play and how did he use the instruments: in a musical way, for toy-playing or in a destructive way. I have also observed the musical production. I have examine whether he played self made up rhythms, previously heard rhythms, motives taken from what I played, or he played random notes.

WIND BAND RHYTHM

In the analysis of the musical production there is a rhythm that has appeared repeatedly and it is worth mentioning it here.

Since the beginning of the music therapy course, Carlos played a characteristic rhythm (and variations of it) that he had probably heard many times when he watched the local wind band playing in the street. This kind of wind band is very typical in the region of Valencia and they are always present in the street festivals. The rhythm is usually played by the snare drum player when the rest of the musicians rest, and gives continuity to the march. It is repeated continuously until the snare drum player gives the upbeat to the band to play again.

The rhythm as played in these bands is:

A musical analysis of this rhythm shows the following characteristics:

- Accents on first and third beats.
- Anacrusis with quick notes before first and/or third beats.
- *Tempo* ♩=100 – 110 beats per minute.

Carlos played different versions of this rhythm that were recognizable because it maintained those three characteristics. Below we can see how he developed different variations of it, and finally was able to improvise also other rhythms with different characteristics.

From now on I will refer to this rhythm as the "wind band rhythm".

RELATIONSHIP WITH THE MUSIC THERAPIST

The other category that I have analyzed is the relationship of Carlos with me (the music therapist). I this category I have looked for observable events that show how he interacted with me.

The objective was to see if he used the musical instruments to communicate with me. I have observed our musical interactions and seen if they were really a communicative interaction or just parallel playing, that is, two people playing instruments in the same room, but with no interaction between them. I have also taken note of non-verbal communication items, like body position and gaze direction.

Finally, I have also taken note of talking. Even though I used a non-verbal music therapy approach, we sometimes said something, and this can give information on what is happening in the music therapy process.

4.4. DATA PRESENTATION

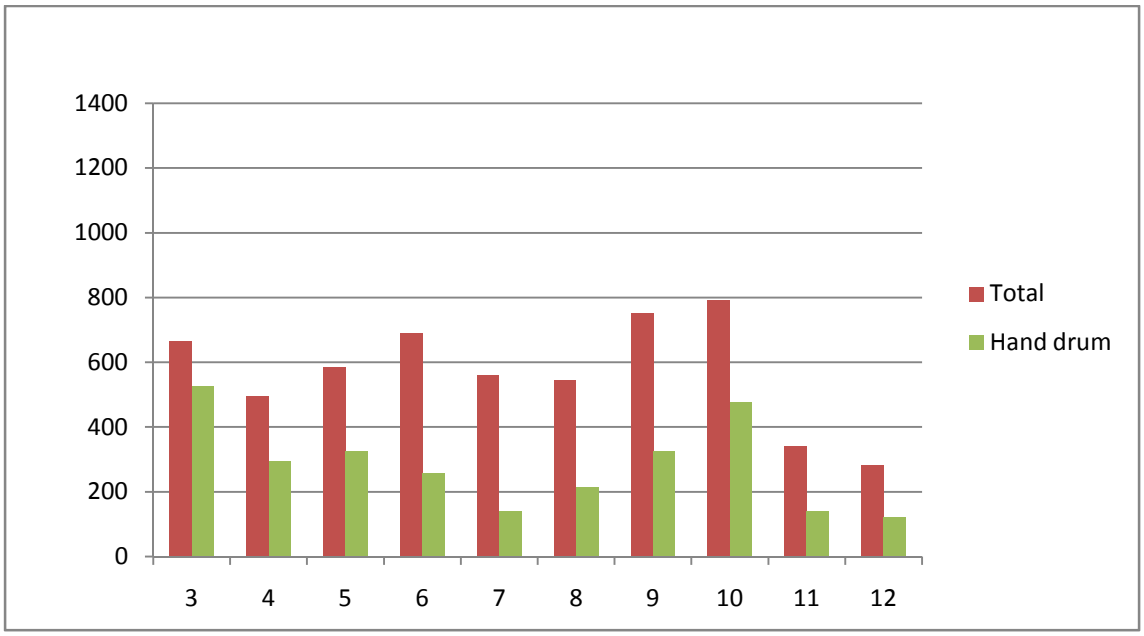
PHASE 1: SESSIONS 3-12

Since the beginning of the music therapy course, Carlos showed a liking for the musical instruments. He asked me the name of each instrument and learned them quickly. His way of playing consisted of short fragments on one instrument, and the only structured sequence he played was a simplified version of the "wind band rhythm", which he repeated time and again.

RELATIONSHIP WITH THE INSTRUMENTS

The instrument Carlos most often chose during this phase was the hand drum, which he always played with sticks. He also played the bongos (also with sticks), the cymbal, the slide whistle, the recorder and the xylophones, with which he developed a particular game that is explained below.

In graphic 2 we can see the amount of time spent playing on the hand drum, and the total amount of time playing musical instruments in phase 1. The vertical axis shows the amount of time measured in seconds, and the horizontal axis shows the session number.



Graphic 2

The way he played was mainly in short interventions, and in an impulsive way. He changed instrument often.

Carlos also played since the first sessions a characteristic rhythm: the "wind band rhythm". The first times he played it was in a simplified version, easy to play. When I played on the clarinet, he often played accompaniment-like rhythms that consisted mainly of straight crotchets, with both hands beating the time.

Carlos also developed a particular relation with the xylophone. The first times he played on it, the plates came off the instrument because he played applying the same kind of effort as in the drums. This made him feel frustrated, and then he played strongly on purpose, in order to make the plates come off. Then we put the plates back in their place. From session 5 on he turned this in a game, and liked to "break" the xylophone, and them to "repair" it piece by piece. This game took a lot of time from some sessions (up to 15 minutes), but I am not going to explain its development because the purpose of this game was not musical.

Relationship with the therapist

Since the beginning of the music therapy course Carlos showed the ability to imitate. Our musical interactions at this phase consisted mainly of dialogues in a turn-taking-imitation form. He waited for me to take the initiative, and he repeated the musical motives I played. He showed little initiative but when I began this type of interaction he followed me.

We also played the cymbal taking turns. When we played in this instrument I used to do a musical joke: to play a *crescendo*. This made Carlos feel excited, and then he told me to play again loud, or to play softly. He also played the *crescendo* himself.

Since the beginning Carlos was able to imitate, so we soon took part in imitative turn-taking dialogues. I then wanted him to able also to take part in free-floating dialogues, which demanded more attention and not only taking motives from what I played, but also him taking the initiative to introduce his own made up rhythms.

When he played the "wind band rhythm" he did not seem to be trying to involve me, he did not seem to want to establish a musical interaction. On the contrary, it seemed that he was playing the rhythm that he had in his head because he had heard it so many times, and he was playing on his own. If I began to play with him, he often stopped doing the rhythm and began playing straight crotchets.

During phase 1 Carlos did not look directly towards me, and he was often in a sideways position. He looked scarcely to me or my instrument, and normally he was looking around the room. He also liked to watch himself playing in the mirror.

The following vignette is taken from session 5. He is playing on the hand drum and I play on the bongos.

Session 5 *I can imitate you*

Carlos places the hand drum in front of the mirror to see himself playing. He begins to play the "wind band rhythm".

I begin to play on the bongos and, when I hit the cymbal, he stops doing the rhythm and hits the cymbal too. Then I play a motive that he imitates: an imitation turn-taking dialogue begins. We hit the cymbal as a cue. In this dialogue, he sometimes looks at me when he is waiting for his turn, and watches himself at the mirror when he plays. He tries to imitate what I play.

After about 30 seconds, he leaves the dialogue and plays a *tremolo in crescendo* on the cymbal. This motive has appeared on previous sessions, and we normally play it in turns. He normally gets excited when the sound grows. While he plays, he looks at himself in the mirror, and when I play back, he looks first at my hands, and then to me while he smiles. The second time he plays softly but I answer playing *crescendo* again. Then he tells me to play softly (*despacito*). When I do it he tells me to play *forte* on

the bongos (*ahí fuerte)*. I do it, and at the end I hit the cymbal again. We go back to our turn-taking dialogue, but he leaves after some seconds.

In this vignette we can see how Carlos is able to take part in an imitative turn-taking dialogue, but shows little initiative. It is interesting to note that he begins to play "his" rhythm (the "wind band rhythm"), but when I begin to play, he stops doing this rhythm, and begins to imitate what I do.

His gaze is directed to the mirror, where he can watch himself as he plays. He also looks at my hands as trying to see how I play in order to copy it, but in general there is not a communicative gaze.

In the following vignette from session 10 Carlos gives me the clarinet to play, and he plays on several instruments.

Session 10 *I can play with you*

Carlos gives me the clarinet. I play a small motive that is based on the rhythm that he has played previously on the hand drum. He answers me by playing a *glissando* on the slide whistle. We begin a small turn-taking dialogue. While I am facing him, he is in a sideways position and he looks downwards. Suddenly he stops playing.

He takes the mallets and begins play the "wind band rhythm"  , but when I come in with melodies on the clarinet based on that rhythm he begins to hit the hand drum strongly.

Then he begins to play what seems a simplified version of the rhythm  , which soon becomes the playing of strong straight crotchets played with both hands at the same time.

Carlos gradually relaxes his arms while he keeps playing the crotchets. He keeps having a sideways position, but with some gazes towards my instrument. His way of playing loses energy. He looks away towards the door, and to his instrument.

At one point, he stops beating the rhythm and beat some single strokes, looking at me sideways, as if he was checking whether I am playing with him. I play notes that match his, and then he stops playing. I stop too.

Carlos takes the simple drum sticks and begins to play on the bongos. Because of their position being in front of me, we end up sitting face to

face, but he doesn´t stare at me. He plays a simple variation of the "wind band rhythm" combined with straight crotchets:

He looks down to the instrument, and sometimes at me, but he seems to be losing concentration. He leaves.

In this vignette we can see how Carlos plays with me in an accompanying style, with repetitive rhythms, but there is not a feeling of sharing a communicative interaction: it is rather parallel playing. This is visible in the music but also in his body posture and gaze direction. He sits mainly in a sideways position and does not gaze directly at me or my instrument.

During the last sessions in this phase Carlos seemed to lose motivation in making music and was busier playing with different objects in the room. He also liked to introduce one of the drum sticks inside the bell of my clarinet. We did a game in session 11 in which I played a whine on my clarinet every time he introduced the stick inside the bell. This game made him laugh a lot, but when I saw that it did not develop into a communicative or musical activity I stopped allowing him to do introduce the stick on the clarinet bell. It had turn into another repetitive activity and in any case, it was harmful to my clarinet. Since then, when he wanted to introduce the stick inside the bell and I stopped him, he became disappointed, and avoided my attempts to begin a musical interaction with him.

On the other hand, in the last weeks he had developed a better control of the drum sticks, and he did not drop them so often as before. This showed an enhanced ability in motor skills, that I wanted to continue developing. The snare drum could help him in this task because the quality of its drumhead makes the stick rebound, and it needs a better hand control from the player. I thought that this instrument could also provide Carlos with the necessary motivation to play longer in one single instrument and to explore more musical possibilities. Therefore I decided to introduce the snare drum in the setting.

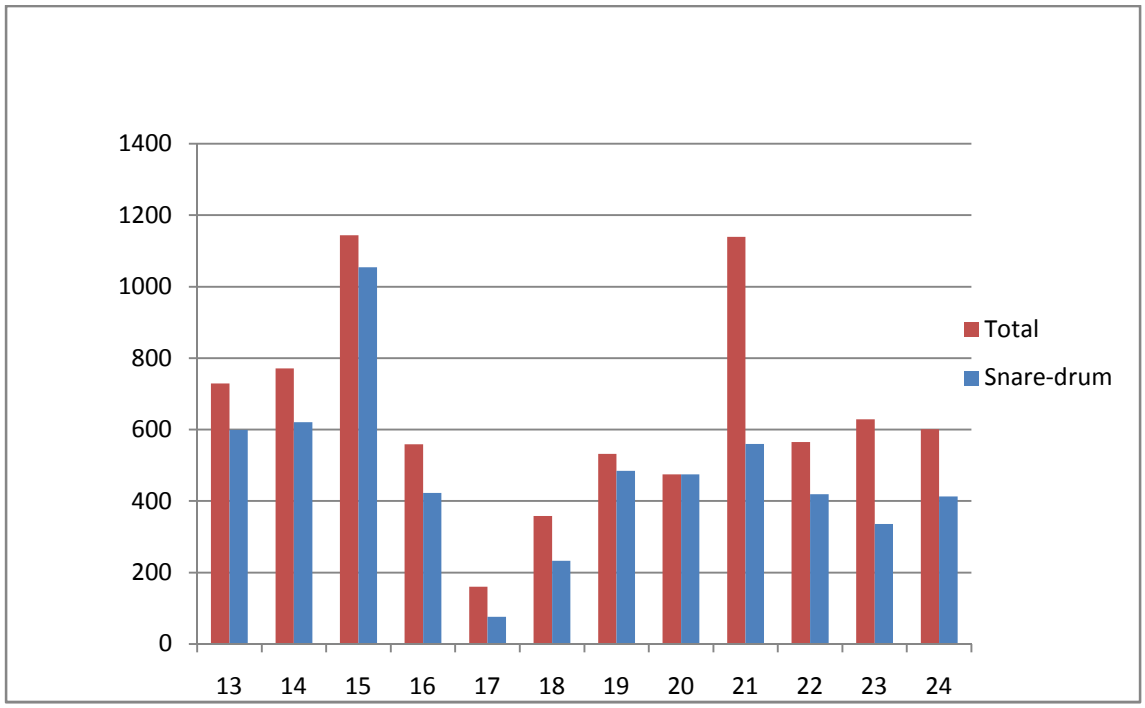
Phase 2: sessions 13-24

In this phase Carlos developed visibly his way of interacting, after going through different stages, as I will explain.

Relationship with the instruments

I introduced the snare drum in the setting in session 13. Since the first moment Carlos showed a special liking for this instrument. He played much longer on it than in the rest of the instrument.

In the following graphic we can see the amount of time spent on the snare drum compared with the total amount of time spent on musical instruments. The vertical axis shows the amount of time in seconds, and the horizontal axis shows the session number.



Graphic 3

In this graphic we can see that the amount of time spent on the snare drum is often very similar to the total amount of time spent playing on musical instruments.

Carlos was also very motivated to explore different ways of playing with the snare drum: he often seemed to be "practicing" ways of playing, like when he played the rebound of the stick. He quickly learned how to remove and put back the snares and was very interested in watching how they worked.

Towards the snare drum Carlos also showed a strong sense of possessiveness that he did not show towards other instruments. He did not want me to play on it, and he even wanted me to stay away from it. Carlos wanted to play it "on his own".

During this phase he also spent much time "breaking" and "repairing" the xylophone. He learnt how to put the plates in order, and in some sessions he knocked over the instrument on purpose several times in order to repair it.

Carlos also continued playing the rest of the instruments now and then, but the time spent on them was smaller than the time spent on the snare drum, as we have seen in graphic 1.

Only in the very last sessions he began to play more often on other instruments, like the xylophone (not only playing the "breaking-repairing" game) and on the cymbal,

where he played an imitation of the church bells, hitting the cymbal with a quaver – crotchet rhythm, and making diminuendo.

The kind of music Carlos played developed with the snare drum. When he played the "wind band rhythm" he played different versions of it, with more quick notes. He also played longer and with a more stable pulse.

RELATIONSHIP WITH THE THERAPIST

His way of relating to the therapist developed a lot during this phase. At the beginning of this phase I had the feeling that Carlos was more interested in playing on the snare drum than in sharing music with me. He often told me to stop playing when I wanted to play this instrument, or even when I wanted to play on my clarinet. He seemed happy to just play on the snare drum and did not show a need to share his playing with me. He just wanted me not to disturb him.

It is interesting to note that in Spanish there is a different word for playing, whether it refers to music (*tocar*) or to toys (*jugar*). He often told me to go and play on the floor (toy-playing) while he played (music-playing) the snare drum (*tú juega en el suelo mientras yo toco el tambor*).

In the course of time he seemed to be more willing to interact with me, and he developed a more participative way of making music. He also showed verbally that he wanted me to join, as we can see in the vignette from session 21.

Our musical dialogic interactions developed from an imitation turn-taking dialogue, where he just copied what I played, to a continuous free-floating way of dialoguing, where he picked up motives of what I played to incorporate them, and at the same time contributed to the dialogue by sharing the "wind band rhythm" and other rhythms that he made up. In terms of non-verbal communication, during this phase Carlos showed more frequent gazes towards me. In some moments he even looked directly into my eyes. His body position was also more often face to face.

In general he showed an enhanced ability to join in my playing to take part in a communicative interaction.

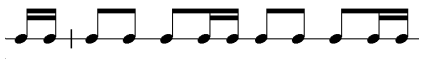
In the following vignettes we can see the development of this communicative way of interacting. The first three show a process of big changes that lead to a new scenario from session 21.

The following vignette is taken from session 13 and shows Carlos´s reaction towards the snare drum the first session I introduce it in the setting. I had put the instrument beside the wall with two chairs at opposite sides: one for Carlos and one for me. We can see Carlos ´s reaction towards the instrument.

Session 13 *The drum is mine*

I am sitting on one of the chairs and he gives me his back, preventing me to play on the snare drum. I try to hold out my hand to reach it, but he stops me with his arm.

He plays the "wind band rhythm" and variations of it, while he watches himself in the mirror.



He also removes and puts back the snares, to see how the sound changes.

I take the hand drum and begin to play, but he also stops me with his hand.

I play this motive and he answers playing the same, while he keeps looking at himself in the mirror:

He practices the rebound and plays this rhythm:

I keep playing rhythms that complement what he plays, but he doesn´t seem to be interested. Only few times he imitates what I do.

In this vignette we can see how with the snare drum Carlos plays different rhythms, tries new and more difficult rhythms (like the rebound), and tries different timbres (with and without snares). On the other hand, Carlos explores the instrument on his own, and does not want me to participate.

In the following sessions he played mainly on the snare drum, but his way of playing was in very short fragments. He stopped a lot to say things like "I am playing the drum" or to ask me questions like "Is this a drum?" or "Is the drum difficult?" He also liked to explore the lower part of the snare drum where the snares are, and to play while he saw them vibrate.

In session 15 an event occurred that meant a change in the way we related. I improvised a song that put into music what Carlos was saying: "I am playing the drum". This represented a big change for two reasons:

1. It was a song that was meant especially for him and put into words and music what he was verbalizing: the pride of be playing the drum.

2. For the first time I was doing something very directive and providing a way of interacting that was not based on what he played, but on what he said.

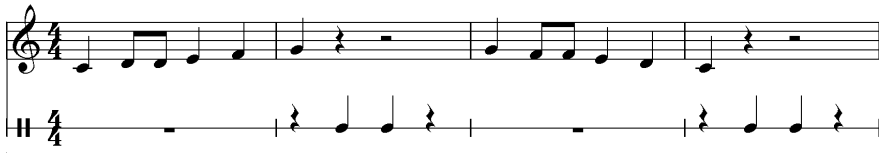
In this session, before I began to sing this song, Carlos was playing on the snare drum while I played on the bongos. We were both sitting in our chairs with the snare drum in the middle. Carlos gradually began to withdraw with his chair, while he took the drum with him. He kept saying "I am playing the drum" (estoy tocando el tambor). Finally I went to where he was and began to play also on the snare drum. He did not seem to like it and averted his gaze, looking towards the wall.

Then I began to sing an improvised song with drum accompaniment that he joined. I played different *tempo* variations on this song, and Carlos followed me all the time. The interaction lasted altogether 8 minutes.

In the following vignette I show the beginning of the interaction.

Session 15 *The drum song*

I begin to sing a song with the lyrics "Carlos plays the drums", while I play a simple accompaniment on the snare drum. In the score we can see the melody on top and the snare drum accompaniment at the bottom:



At the beginning he looks at me with surprise, but soon he joins by playing the accompaniment. He stares me directly in the eyes and smiles. I sing the song in different *tempos* and he adapts to the changes. He is enjoying the song and shows it with smiles and little laughs.

I keep playing the song with different *tempos* and dynamics, and Carlos follows precisely my changes. He also stares at me expectantly in the pauses between each version of the song.

Finally I play quick notes and he joins, but later stops me with his sticks. I want to stop the interaction because it is very intense and I find it difficult to bear it, but he wants me to keep singing the song.

His way of behaving in this vignette differs totally from what he did before: he stares directly at me, and appears to be completely absorbed by the interaction.

This song made a big impact on both of us. In the following sessions Carlos was very distracted. He did not play much music and spent a lot of time playing the "breaking-repairing" game with the xylophone, and playing with my clarinet stand. At those moments I usually improvised some melodies on my clarinet to try to attract him with music, but he often told me to stop playing.

He also spent time playing the snare drum which he wanted to play on his own. He often told me to sit on the floor and play (toy-playing) with the other instruments. He did not want me to play on "his" instrument (the snare drum), neither on "my" instrument (the clarinet). He said things like "You don´t know how to play the drum".

I was having difficulties in trying to involve him in music making with me. He also appeared to be upset because I did not do what he wanted me to: to sit on the floor and play on the simpler instruments.

But something changed in session 19. We were both sitting at both sides of the snare drum. I was trying to play on it, but Carlos did not want me to: he wanted to play the snare drum on his own. He put his sticks on the drumhead to prevent me from playing. I was hitting his sticks as a game. He did not want to look towards me, and looked away towards the wall with an upset expression on his face. Suddenly his face lighted up, and he asked me to play the song "Carlos plays the drums".

The following vignette shows the moment when he asks me to play the song.

Session 19 Play the drum song!

We are sitting face to face with the snare drum in the middle. I am sitting on my chair and Carlos is standing. Carlos is trying to prevent me from playing by stopping my drum sticks with his.

Then he stares directly at me and asks me to play the "drum song" (*Canta la canción de Carlos toca el tambor*). I begin to sing it and he joins the accompaniment with the snare drum. Immediately after stopping he tells me "Now faster!" I sing it fast and when I finish he says "Now faster, and we are going to do it easy and even more difficult". He keeps telling me how to sing every time with sentences like these. When I tell him to sing too he does it.

Carlos seems to want to take control of the situation by telling me how to sing the song. He looks at me most of the time and shows that he is having fun and getting more comfortable each time. He also looks at the camera. He is getting more relaxed, and he sits.

We can see how Carlos still wants to take control of the situation by telling me how to play, but then he appears to become more relaxed. He expectantly waits me to begin after he has indicated me how he wants me to sing the song, while staring at me. This attitude means a big change if we compare it with how he was behaving in this period. He appears more relaxed and attentive.

In the following sessions (20-22) Carlos kept asking me to play the drum song at moments where he was beginning to feel upset.

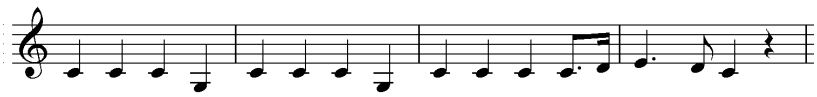
From session 19 onwards Carlos showed some changes in the way he related to the instruments and to me. He still told me how to play and stopped me from playing, but he engaged more often in musical interactions, and in these interactions he appeared more communicative. This was visible in his body position, gaze direction, and musical production.

The following vignette is taken from session 21. In this session Carlos had been playing on the snare drum on his chair while I played on the clarinet sitting on the other chair in front of him. Carlos was telling me to wait to begin playing until he told me to play, but he never told me to. If I decided to just begin, even though he kept telling me to stop now and then, he did not seem get upset, and did interact musically with me.

In the vignette we can see Carlos sitting on the floor. He is playing with the drum-sticks while I play some melodies on the clarinet to attract him. He seems to be ignoring me.

Session 21 *I like to join*

Carlos plays with the simple drum-sticks some beats on the floor. I take that pulse and improvise a melody.



Carlos moves his head to the rhythm, and then begins to sing back this melody while he stands up and walks towards the snare drum. He begins to accompany my melody with beats on the snare drum while he looks at himself in the mirror. Then he sits on the chair in front of me.

Then he plays crotchets or small improvised fragments on the snare drum. He often looks at me and pays attention to what I play. When he stops playing, he listens to my playing in order to join again, and often adapts to my way of playing in terms of tempo and rhythmic motives.

Suddenly he stops playing and begins to move the snare drum to the middle of the room. He says "It seems that one plays here better". He takes his chair, and then tells me "Marta, I am going to move your chair too".

Carlos shows a motivation to stop playing on the floor and to come and join my playing. Although he plays in small bits and does not develop these motives, he appears very attentive and involved in a communicative interaction, and often looks at me and my instrument. We are not playing parallel, we are playing together.

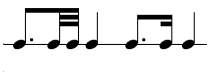
It is also interesting to note that, when he moves the snare drum to the middle of the room, he does not do it to avoid me. On the contrary, he tells me he wants to move my chair too. He wants me to be there in order to play music together.

In the following vignette from session 22 we can see how Carlos has developed his way of taking part in a musical communicative interaction. It is taken from the beginning of the session.

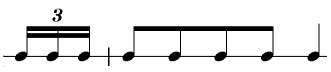
We can see how Carlos and I participate in a musical interaction where both of us collaborate in the dialogue, both of us share motives to the improvisation, and how Carlos is able to play a variety of rhythms while being attentive to my playing.

Session 22 *We play together*

Carlos begins to play the "wind band rhythm" while he is watching himself in the mirror:



I sit on the chair in front of him and play on the hand drum. Carlos sits down in front of me and continues with his rhythm while I play an accompaniment based on quavers with some anacrusis of quick notes. He looks at his instrument at towards me. He takes a motive from what I am playing and plays:



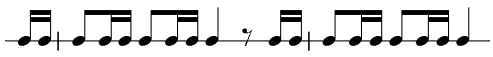
Then he develops it into another rhythm with variations:

We make a pause and he initiates another rhythm in a faster *tempo*:

After repeating this rhythm several times, he plays small fragments of fast notes, with some strokes on the cymbal.

The strong connection that we have is visible when at one moment we play exactly the same beats:

Afterwards he keeps playing different rhythms like:



After a while begins to lose concentration and finally begins to roll the cymbal.

I the whole interaction he stares repeatedly at me and also at my instrument. He also looks at the camera.

In this vignette Carlos appears to be more involved and this is visible in his body position (he faces me when we play together), gaze direction (he often stares at me or my instrument) and musical production (he contributes with motives to our dialogue, and at the same time he picks up my motives and incorporates them).

5. Results

The data presented show a development in the way Carlos interacted with the therapist, when comparing the vignettes from sessions 5 and 10 to the vignettes from sessions 21 and 22.

The vignettes from sessions 13, 15 and 19 show how the introduction of the snare drum in the setting meant a period of changes in the way Carlos related.

In the following chart we can compare sessions 5 and 10 with sessions 21 and 22. The two versions of this chart present my view as therapist involved on the case and observer, and the view of a "blind" music therapist that did not know about the case.

THERAPIST'S VIEW

Session	Body position	Gaze	Dialogue	Accompaniment	Variability

5	sideways	himself	imitates		variable
10	sideways	himself		joins	rigid
21	face to face	himself/ therapist		joins/ ignores	variable
22	face to face	therapist	initiates/ imitates		variable

BLIND OBSERVER'S VIEW

Session	Body position	Gaze	Dialogue	Accompaniment	Variability
5	sideways	himself/ therapist	imitates/ initiates		variable
10	sideways/ gives back	himself/ away		joins/ ignores	rigid
21	face to face/ sideways	himself/ away		attracts/ joins	variable
22	face to face	himself	initiates		variable

CHAPTER 4: DISCUSSION

In this chapter I will discuss the results of the analysis from chapter 3. I will compare the way Carlos related to the instruments and to the therapist in the first sessions with the kind of interactions that appeared in the last sessions. I will show how these changes are attributable to the inclusion of the snare drum in the setting from session 13. We will see how, from the very first moment, Carlos showed a special affinity with this instrument, and how this affected our relationship.

I will firstly show why Carlos's relationship with the snare drum was special. Then I will discuss the changes in the way he related with the musical instruments, focusing on the differences of relationship between the snare drum and other instruments. After that I will analyze the changes in the way Carlos related to the music therapist, which were visible since the snare drum was in the setting. This will answer the first part of

the problem formulation, i.e., whether it is possible to relate the use of a favorite instrument (the snare drum in this case) and the development of communication.

To answer the second part of the problem formulation, I will compare the use Carlos made of the snare drum with the descriptions of the intermediary object in the literature. Firstly I will compare those characteristics that an instrument needs to have in order to be able to function as an intermediary object. Secondly I will compare the use Carlos made of the snare and the findings about how he interacted with it, with the descriptions of the use of an IO in the literature.

1. FAVORITE INSTRUMENT

Since I introduced the snare drum in the setting, Carlos showed a special liking for it. The way he approached it, the way he tried new rhythms, how he investigated the instrument itself, and so on, tells us that this instrument was special for him.
He also showed a sense of possessiveness since the very first moment, which is visible in the vignette from session 13. I felt that he identified with this instrument from the beginning because he already knew it, as he had seen it so many times in the street, and he already liked it.

It is interesting to note that, from session 13 to 20, Carlos made an almost exclusive use of the snare drum, as it is visible in graphic 1. These eight sessions were a period of great changes, where his amount of playing increased a lot from session 13 to 15, and then abruptly decreased until it reached its lowest level in session 17. From session 18 to session 20, the amount of playing increased again.

This quasi exclusive use of the snare drum, and the fact that Carlos went through such a change gives an impression of the great impact that the introduction of this instrument should have made on Carlos.

From session 20 to 24 the amount of playing was stabilized (with the exception of a remarkable pick on session 21), and Carlos began to use different instruments again.

2. RELATIONSHIP WITH THE INSTRUMENTS

During the whole course of music therapy, and especially from session 13 when I introduced the snare drum in the setting, Carlos developed his way of playing from an impulsive and repetitive way of playing to a more flexible and creative one.
We have seen that during the first phase he played mostly a repetitive and simplified version of the “wind band rhythm” as well as straight crotchets on the hand drum, repetitive motives on the cymbal and flutes, and random notes on different instruments. His way of playing was impulsive and in short utterances. During this phase the instrument he chose to play more often was the hand drum, as we have seen in graphic 2.

It is interesting to note that from sessions 3 to 5, more than a half of the total amount of time playing instruments during each session was spent on the hand drum. On the contrary, from session 6 to 12 he also spent time on other instruments, even though the hand drum was chosen more often, as we can see in graphic 1. This shows that Carlos liked the hand drum, but not so much as to leave other instruments.

But Carlos's relationship with the snare drum was different from the first time I introduced it in the setting. From that moment he began to play more different things, like variations of the "wind band rhythm" and some "made up" rhythms. The use of other instruments different from the snare drum decreased visibly from session 13 to 20, as we have seen in graphic 1 and 3.

Interestingly, from session 21 to 24 he began to play on other instruments as well, although the amount of time spent on the snare drum represented more than a half of the total amount of time he spent playing, in most of the sessions (see graphic 3).

The way Carlos started playing with the snare drum turned later on into a more flexible, creative and interactive one. This is visible in the vignette from session 22, where he plays different variations on the "wind band rhythm", in a more complex version of it that is more similar to the way it is played by the wind band musicians. He also plays other rhythms with different qualities, like *tempo*. This is interesting because, up to this moment, Carlos played mostly on the same *tempo*, no matter which rhythm he played. In this vignette we can also see that his kind of playing is also more stable if compared with the first sessions, with a clear *tempo* and rhythmic structure.

It is striking that from session 21 to 24, after a period of big changes from session 13 to 20, Carlos began to spend more time on other instruments apart from the snare, as we can see in graphic 1. What is interesting is that his way of playing on these instruments had also developed. For example, as I have already mentioned, Carlos usually used the cymbal to play a *crescendo*, but in session 21 he also interacted with me for more than 5 minutes in an improvisation on the cymbal with different rhythms and dynamics. During the last sessions of the music therapy course, he also began to spend more time playing on the xylophone. This contrasts with the kind of relationship Carlos had with this instrument before, when he used to play the "breaking-repairing game" with the xylophone, but he did not usually use it as a musical instrument.

3. Relationship with the music therapist

3.1. Changes

The introduction of the snare drum in session 13 and the fact that it became Carlos's favorite instrument meant a big change in the way Carlos interacted with me. When I first introduced the snare drum in the setting Carlos appeared to be very happy, but not especially motivated to get involved in an interaction with me. He seemed to experience a big joy just playing the new instrument on his own. This is visible in the vignette from session 13, where he plays the snare drum with his back to me, and

positioning himself between the instrument and me. He appears to be investigating the different qualities of sound and how the instrument works, but he does not involve me in those investigations.
During the period from session 13 to 20 there was a big development in the way Carlos interacted with me, that went through big changes. The events that occurred in sessions 15 and 19 illustrate these changes.

The drum song event that is explained in the vignette from session 15 meant a milestone in the relationship of Carlos with me. Carlos found a lot of joy in this song that meant an acknowledgement of what he was feeling: the pride of being playing the drum. In this vignette Carlos showed many communicational behaviors that were not typical until that moment. For example, he looked at me, staring into my eyes in a continued manner while he smiled. The feeling that I had as a therapist in that moment was one of a strong interpersonal communion. “Interpersonal communion” has been defined by Stern as a kind of affect attunement where there is a sharing with another of an experience “with no attempt to change what that person is doing or believing”. This is different from “communication”, which is defined by the same author as an exchange or transmission of information “with the intention to alter another’s belief or action system” (1985/2000, p.148).

At this moment I was putting into words the feelings expressed by Carlos, with the only objective to share our affective states. I felt a strong feeling of being together with Carlos, and he showed he was experiencing similar feelings by the way he responded to me.

We have seen in chapter 3 how Carlos went through a difficult period during the following sessions, from 16 to 19. He felt often upset and the amount of time spent playing dropped abruptly. During these sessions Carlos did not let me play on the snare drum nor on my clarinet, and when I tried to play, he often made me stop.

The vignette from session 19 shows how Carlos was facing a situation (me wanting to play the drums) that made him feel upset. Suddenly, he brought back that song that we shared in session 15, that had meant an acknowledgement of what he was feeling (priding himself on be playing the drum), and a way of having an interaffective interaction. We had not sung this song since session 15, and here Carlos asked me to sing it.

This event was very meaningful for two reasons. Firstly, it was the first time that Carlos asked me overtly to interact with him. And secondly, this event can be explained as a way that Carlos has found to regulate his own arousal state (feeling upset), which worked very well.

This fact is very remarkable because most of the characteristics found in children with FXS like hyperactivity, poor eye contact, short attention span, tactile defensiveness,

echolalia, hand flapping or hand biting, can be explained as the child's attempts to regulate arousal (Fernández Carvajal & Aldridge, 2011). In this vignette, on the contrary, we can see how Carlos has found a "healthy" (not stereotyped) way to regulate his arousal levels.

As I have explained in chapter 2, the regulation of the arousal levels is an essential prerequisite to become attentive and then allow an interpersonal relationship to emerge. Furthermore, if the child learns that tension states can be regulated, he develops a positive attitude towards these states. This event, thus, can be associated with the changes in the way Carlos related with me in the following sessions.

I have described two events that could have played a significant role in what happened subsequently. In the following section I will describe the changes in the way Carlos interacted in a communicative way with me.

3.2. AFFECT ATTUNEMENT

During the whole process of music therapy Carlos developed his ability to respond to affect attunement, and thus to participate in a communicative interaction. "Affect attunement" has been defined by Stern as "the performance of behaviors that express the quality of feeling of a shared affect state without imitating the exact behavioral expression of the inner state" (1985/2000, p.142). According to this author, only then can feeling states within one person be knowable to another, and they can both know that a transaction has taken place without using spoken language. The way Carlos responded to "affect attunement" is visible if we compare what happened in sessions 10 and 21. In both vignettes I am playing the clarinet and trying to tune in to Carlos by matching[7] his way of playing.

In the vignette from session 10 Carlos plays in an impulsive and repetitive way, while I play melodies based on the rhythm he has played previously. At a given moment he slows down a bit and I follow him. He seems to notice that, and he plays some single strokes as if he was checking if I follow him. I do follow, but he stops playing. The interaction, thus, is interrupted.

On the contrary, in the vignette from session 21, I tune in to Carlos by playing a melody that takes the "vitality affects" (the *tempo* and intensity) expressed in Carlos´s beating on the floor, in order to tune in to him. He responds in a multi-modal way, i.e., moving his head, singing the melody, walking at more or less the pace of the *tempo*, and beginning to play on the snare drum an accompaniment to my melody. Even though this interaction is short and he plays fragmented motives, an intersubjective contact has been made. He shows it when later moves the snare drum to the middle of the room, moves his chair, and then asks me to stand up in order to move my chair too.

[7] Matching is an improvisational method that has been defined by Wigram as "improvising music that is compatible, matches or fits in with the client's style of playing while maintaining the same tempo, dynamic, quality and complexity of other musical elements (Wigram, 2004).

This "contact" event meant an initiation of a communicative interaction that eventually become an shared improvisation with Carlos on the cymbal and myself on the hand drum[8].

3.3. DIALOGUING

The way Carlos interacted musically with me developed from an imitative turn-taking type of dialogue to a continuous free-floating type of dialogue. This is clear if we compare the vignettes from session 5 and session 22.

In the vignette from session 5 Carlos interacts with me by imitating what I have just played, or what I have played some sessions before, e.g. the *crescendo* on the cymbal, without introducing new ideas. The interactions consist in imitation turn-taking dialogues.

In the vignette from session 22 he shows that he is capable of taking part in a free-floating kind of dialogue (Wigram, 2004), where we both can hear and respond to each other's musical ideas, without a pause in the musical process. This means a more developed capacity to interact that does not consist in an exact imitation of what the other partner plays, even though there is some kind of matching. This can be explained with the concept of "affect attunement" already explained. Bunt translates this term into "tuning into the child" (Bunt, 1994), and explains it as a way of interacting where some elements of the child's playing are imitated without being an exact imitation, and this is read as an attempt to connect with his feelings. In the described dialogue we both take elements of each other's playing, and there is a feeling of connection between the players, that is visible in the communicative behaviors.

In the following section I will describe some of the communicative behaviors that appear in this and other vignettes.

3.4. COMMUNICATIVE BEHAVIORS

Carlos showed more communicative behaviors in the last sessions, when compared with the early sessions. I have focused particularly in two behaviors: gaze and body position.

Carlos showed an enhanced looking behavior, with gazes toward the therapist and her instrument, more evident in the last sessions of the music therapy course.

In the first sessions his gazes towards me were rare, and his eye-contact was brief. An example of this is the vignette from session 5. Here Carlos watches himself in the mirror while he plays and looks at briefly me or my instrument when I play. While he does look at me, he does not do it in my eyes, because he looks at me while I am playing and looking at the instrument.

[8] This interaction is mentioned in section 2 in this chapter.

In the last sessions Carlos showed more enhanced looking behaviors in quality and quantity. He looked at me or my clarinet more often, and he also looked into my eyes for several seconds.

This is very well illustrated in the vignette from session 15. This event begins with Carlos averting his gaze from me, but when I begin to sing the song, he looks at me and he keeps staring at me repeatedly. This event is outstanding because it is the first time Carlos stares me directly into the eyes. Subsequently there were more interactions where he looked me into my eyes, but this one is the one he made eye-contact for longer. In the vignette from session 22 I observed also repeated gazes to the therapist's eyes and hands[9].

Looking behavior is recognized as an important feature in the development of communicative abilities. Direct eye-to eye contact is a rich source communication between two people that can sometimes be too arousing (Bunt, 1994). Thus, the fact that Carlos showed more looking behaviors (including direct eye-to-eye contact) meant that he was getting involved in communicative interactions.

A different behavior consists in averting the gaze. This is usually done in order to the regulate arousal levels (Fernández Carvajal & Aldridge, 2011). Carlos showed this kind of behaviors more often in phase 2. The explanation for this can be that during this phase he was facing more situations that required a close communicative interaction, and it was sometimes difficult to bear. This is illustrated in the vignette from session 15. At the very beginning, before I begin to sing the song, he is averting his gaze because I am playing on the snare drum and he is not feeling comfortable. But when I begin to sing the song he gradually begins to look at me more often. He is feeling more and more comfortable, and he does not need to use a behavior to regulate his arousal level anymore.

Averting one's gaze is not considered a sign of lack of communication when, while exchanging regularly eye contact with the therapist, the child sometimes averts his gaze in order to regulate himself (Schumacher & Calvet, 2007a).

Another communicative behavior, which is related to the looking behavior, is the position of the body, with regard to another person. During the first sessions Carlos placed himself in a sideways position with regard to me or even gave me his back. In this position it was difficult to contact the each other through the eyes. An example of this is in the vignette from session 10. Here he is sitting in a sideways position and interacts musically with me, but without turning around towards me.

Differently, when I introduced the snare drum in the setting I put one chair on each side, one for him and one for me. If we both seated, it meant that we had to face each

[9] This fact is not been endorsed by the music therapist who made the peer debriefing , as I explained in chapter 3.

other. This did not seem to pose a problem for him. Even though he sometimes averted his gaze while interacting with me, he did not move his chair to another place, with the exception of session 15, as I have explained[10].

Thus, since I included the snare drum in the setting, Carlos felt more comfortable in an enface position.

4. INTERMEDIARY OBJECT

In this section I will compare the findings of this investigation with the concept of intermediary object as described in the literature.

4.1. CHARACTERISTICS

The snare drum shows many of the characteristics that the authors referred in the literature consider as belonging to the intermediary object.

According to Benenzon (2004):

- The snare drum has a great sound and a huge dynamic range.
- The snare drum tends to expansion, not to introvertion. This is due to its sound qualities and the way it is played.
- The snare drum has a very clear sound that makes possible the interpretation of clear rhythmical structures and complicated rhythms.

According to Alvin (1977):

- Carlos experienced no sense of danger from the instrument.
- The touch of the drumhead of the snare drum gives a feeling of resistance. The patient perceives this feeling of resistance from it that produces some physical awareness.
- The snare drum can provide a sense of strength and mastery. Carlos felt that he was playing an instrument that was difficult. He asked me "Is the drum difficult?" or told me "You don't know how to play the drum!"
- The snare drum was the instrument that Carlos chose to play more often, as it is shown in the graphic 1. Furthermore, the way he played on it and what he told me in reference to the snare drum showed that this instrument was special. Carlos felt an affinity with the instrument that lead to his identification with it.
- He also showed a feeling of possession towards the instrument, as he did not want to share it with me.

[10] In the vignette from this session he retreats with his chair while he takes the drum with him, before I join him and sing the drum song

There is one characteristic of the intermediary object according Benenzon that the snare drum does not have: it should be easy to transport. The snare drum is too heavy to be moved easily, and Carlos and I used to play on it on chairs.

4.2. FUNCTION OF THE INTERMEDIARY OBJECT

According to the literature, the function of the intermediary object is to establish or to enhance communicative interactions. We have seen that the snare drum fulfilled most of the characteristics that an IO should have, but the next question is whether it helped to the development of communication with Carlos.

As I have explained in the previous sections in this chapter, Carlos developed his way of interacting in a communicative way since I included the snare drum in the music therapy setting. It is interesting to note that while he was going through the changes I have already explained (from session 13 to 20), he kept playing almost exclusively on the snare drum (see graphic 3). On the other hand, from session 21, when he began to show more communicative behaviors, he began to use other instruments as well. This can be interpreted in terms of the IO: when the snare drum fulfilled his role as a facilitator of communication, it was not necessary anymore. Carlos kept playing this instrument because it was still the instrument he liked most, but he did interact with other instruments and he did not appear to have such a possessive feeling towards it (he allowed me to play on the snare drum more often).

The data analysis tells us that the snare drum might have helped Carlos enhance his communicative interactions. On one hand, with the snare drum he was more motivated to play for longer periods, and to play different rhythms because it was his favorite instrument and he enjoyed playing on it. The fact that he spent more time "on-task" allowed him to get involved in more communicative interactions with me. As I have explained, attention needs to be stabilized in order to be able to integrate stimuli (Schumacher & Calvet, 2007a).

On the other hand, the physical characteristics of the snare drum made it suitable to support a discharge of energy, as when Carlos played on it strongly. Unlike the xylophone, which broke into pieces when Carlos played loudly, with the snare drum he could play in a big dynamic range.

5. LIMITATIONS OF THE STUDY

The focus of this study has been on the analysis of the role that the patient's favorite musical instrument had in the enhancing of communication. The objective was to relate this role of a favorite instrument with the concept of intermediary object. The study has been successful in analyzing the relationship of Carlos with the instruments and with the therapist, and showed that there was an improvement in the way he got involved in communicative interactions. Furthermore, this study has shown that the

snare drum (Carlos's favorite instrument) has functioned as an intermediary object, as it is described in the literature.

But this investigation presents some limitations.

Firstly, the quality of the video recording was not enough to be able to show all the communicative interactions of Carlos. Even though there was an assistant music therapist in the sessions, which moved the camera to focus on Carlos, there were often blind spots. Thus, some of the selected video clips do not show some part of the body that can give much information about the quality of the interaction, like face, hands, and so on. Moreover, a high-quality equipment would made it possible to measure the amount of time spent playing more accurately, and to show clearly eye-contact.

Secondly, while the analysis made by a blind observer was a good validation tool, the definitions of each item and the possible answers were not clear enough. Therefore, the results of this analysis do not give a complete view of the selected event. For example, in the item "gaze" there was not a specific mention to the object (Carlos's instrument, therapist's instrument or shared instrument). This could have given valuable information about the indirect communication through an object. This kind of communication is a previous step before direct one to one communication can take place (Bunt, 1994), and this is very much related to the focus of this study.

Finally, it would have been valuable to make an interview with Carlos's parents, therapists and educators, in order to determine whether the observable changes in the way he communicated were also observed at home and at school.

6. Reflections on my role as a therapist

After having done this investigation I have had the opportunity to reflect on my own role as a music therapist in my work with Carlos. It has given me an insight into my music therapy approach.

Reviewing the videos and making the analysis has shown me that, even though during the sessions I tried to tune in to Carlos with my playing, I sometimes made him feel upset when he told me to stop playing and I did not. Moreover, Carlos had a strong feeling of possession towards the snare drum, but I kept trying to play on this instrument as well. This made him feel frustrated, and then interaction was not possible. I could have taken into consideration what he said, while at the same time using the improvisational techniques to make contact with him. This reflection is in accordance with Kim et al., (2009) who found in their study with autistic children that they displayed more initiatives and were more able to share their affects when it was the child who led the interaction, and not the therapist.

At the time of my work with Carlos, I was using the music therapy methods for the first time and, even though I knew that music was a valuable medium to communicate in a direct way, I was not confident enough of my abilities as a music therapist. Now I feel that it is important to focus on the child's needs while respecting his own process, and to trust in my own ability to communicate through music.

CHAPTER 5: CONCLUSIONS

1. RESULTS

The problem formulation of this master thesis was twofold:

- Is it possible to relate Carlos's relationship with a favorite instrument and the development of communication?
- In which way this use of a favorite instrument can be related to the concept of intermediary object?

The results of this investigation show that Carlos did present more communicative interactions in the last sessions, where he was playing with the snare drum (his favorite instrument), when compared with the first sessions, when he was playing other instruments.

These improvements in the way Carlos interacted in a communicative way can be explained with the concept of intermediary object. The snare drum fulfills the characteristics an IO needs to have, in terms of physical qualities and kind of relationship with the patient. I have also showed that the snare drum fulfilled its role of facilitator of communication, because it helped to enhance communicative interactions, and lost its pre-eminence when its objective was achieved.

2. NEW PERSPECTIVES

2.1. THE THERAPIST'S INSTRUMENT AS INTERMEDIARY OBJECT

The focus of this master thesis has been the favorite instrument of Carlos, which I have related with the concept of intermediary object. But we have seen that the intermediary object can refer to the instrument that the patient chooses to play and with which he can get involved in a communicative interaction (as explained by Benenzon (2011) and Alvin (1977)), and also to the instrument that the therapist uses in order to achieve communication with the patient (as it suggested by Rojas-Bermúdez (1997), Alvin (1977) and Oldfield (2006)). The focus of this mater thesis has been on the IO in its first use, i.e., the instrument with which the patient has a special affinity, but an analysis of the therapist's instrument as intermediary object would give also much information about what happens in the musical interactions.

2.2. FAVORITE INSTRUMENT

In the literature review I did for this study I did not find specific studies or descriptions about the role of the intermediary object in the achievement of therapeutic goals. While I have found some studies that, even not referring to the IO, mention the special use instruments, they do not focus on the relationship of the patient with this instrument.

In her doctoral thesis, Holck (2002) did a literature review on the development of "interaction themes" in the musical interactions between autistic children and music therapists. In the future it would be interesting to make a similar extensive literature review on the specific use of the patient's favorite instrument and his relationship with it.

The role of a favorite instrument in music therapy is a subject of study that can help therapists in their music therapy practice. It can guide the selection of a setting of instruments, as well as made the therapist more aware of the communicative possibilities of the patient´s favorite instrument. Therefore more research would be of great value.

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APPENDICES

1. Raw data

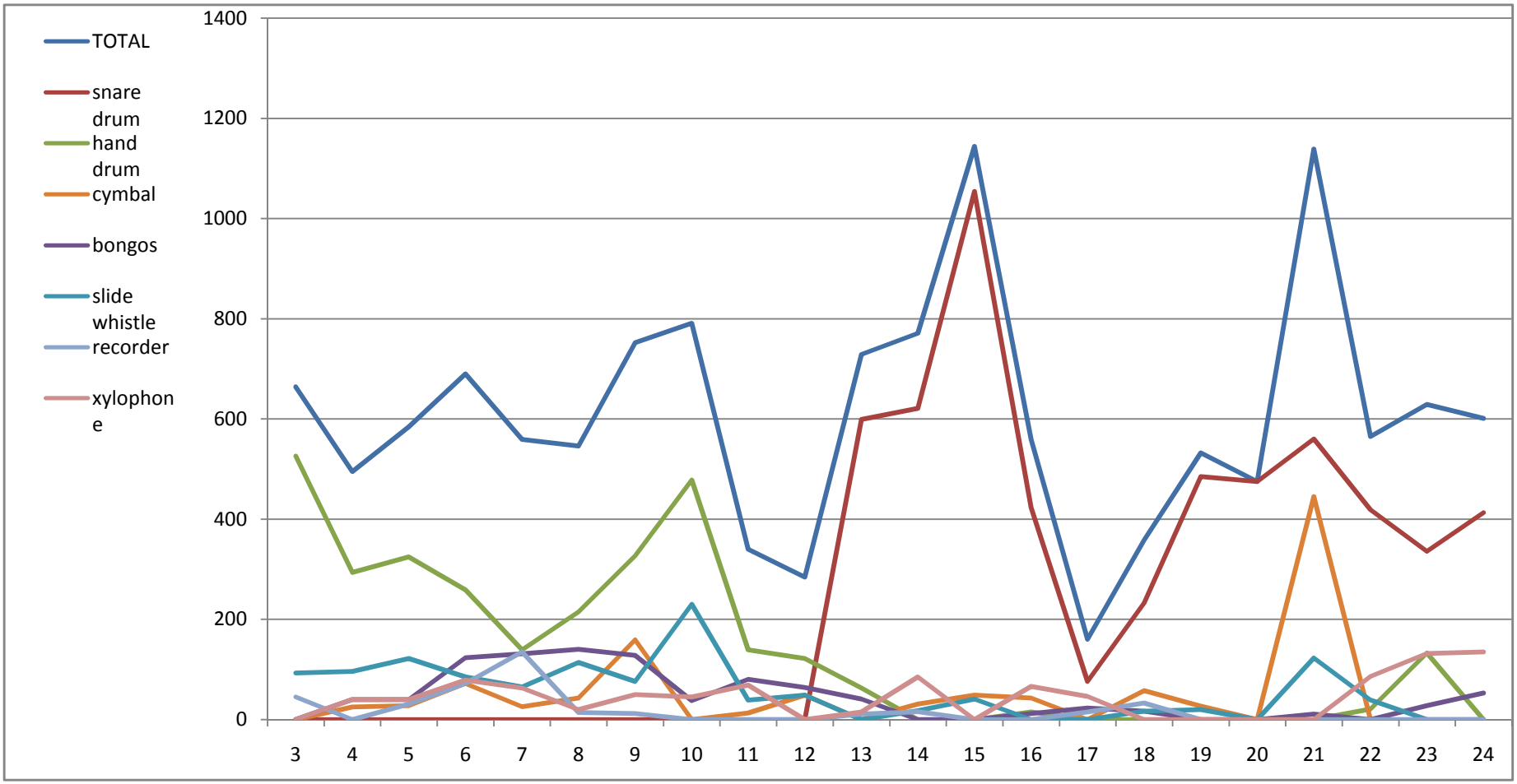
2. Graphic 1

3. Graphic 2

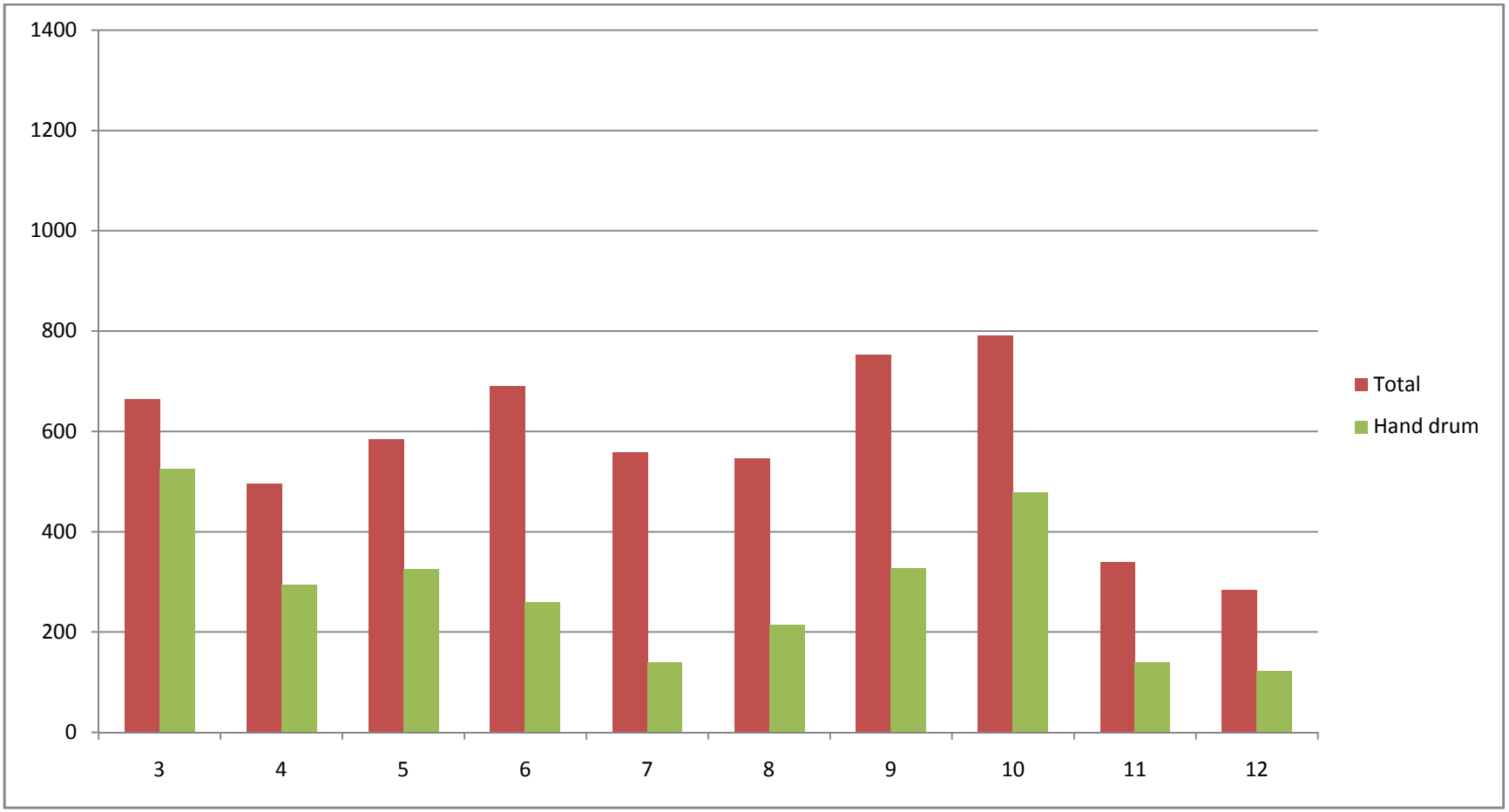
4. Graphic 3

5. Consent form

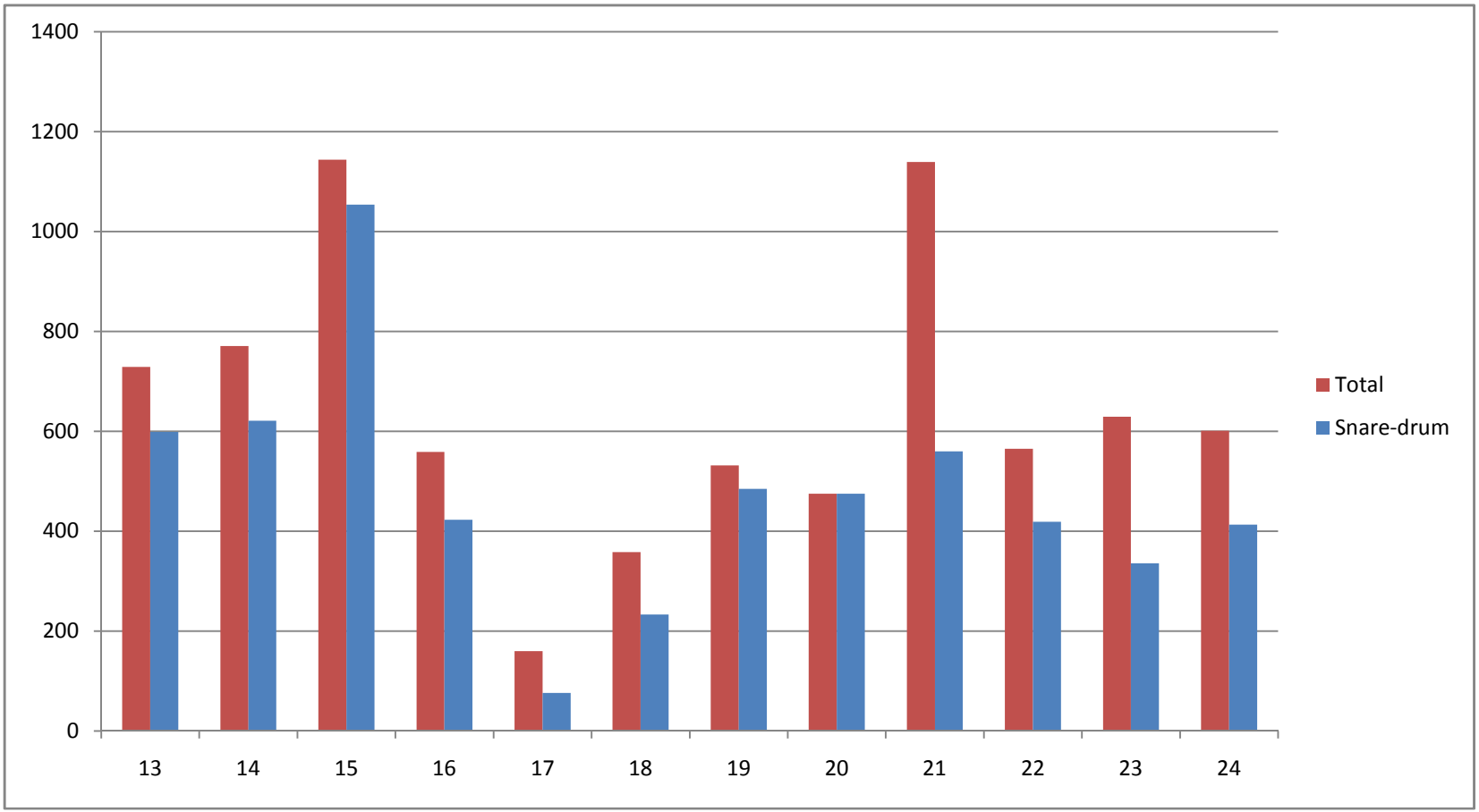
Video recordings from sessions 5, 10, 13, 15, 19, 21, 22


TOTAL
snare drum
hand drum
cymbal
bongos
slide whistle
recorder
xylophone
1400
1200
1000
800
600
400
200
0
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Graphic 1


1400
1200
1000
800
600
400
200
0
3
4
5
6
7
8
9
10
11
12
Total
Hand drum

Graphic 2


1400
1200
1000
800
600
400
200
0
13
14
15
16
17
18
19
20
21
22
23
24
Total
Snare-drum

Graphic 3

AUTHORIZATION FOR RECORDING IN VIDEO/AUDIO

Mr/Ms.....
(Name of the patient/authorized person/ institution)

Give my consent for the music therapy sessions by

Mr/Ms.....
. (Name of the music therapist/ supervisor)

To be recorded and watched with the aim of supervision and assessment of the music therapy session, as this professional is doing her music therapy practical training within the frame fo the Post Graduate Course in Music Therapy of the Music, Art and Process Institute

Mr/Ms.....
. (Name of the supervisor)

Music therapist supervisor, compromise on using the recording data preserving as much as possible the privacy of the person, using the videos in a restrictive and professional way in the areas of clinic, revision, assessment, supervision and/or research.

The recordings will be protected by the following ethical code:

- It will not be able to use the video of the sessions in its total length, but those bits that need to be asses.
- The videos will be used for internal analysis (supervision) and/or teaching purpose..
- The video recordings will be realized only within the music therapy room and during therapy.
- The video recordings will be realized by the researcher or music therapist.
- The researcher will keep in a secure place the information of thee video.

Signature (patient/authorized person/institution)

Signature (music therapist)

Signature (supervisor)

....., the..... of .....