

Song learning within group music therapy in combination with Picture Communication Symbols  
(PCS) for children diagnosed with Autism Spectrum Disorder (ASD)

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## Abstract

An increasing number of research studies have highlighted various links between Autism Spectrum Disorder (ASD) and learning through visual, aural and kinesthetic aids. This study explored the process of song learning using Music Therapy techniques in combination with Picture Communications Symbols (PCS). Music therapy sessions were conducted with two groups of children diagnosed with ASD at Unica School for Autism. For the first 3 sessions Group A's sessions were conducted making use of music therapy in combination with PCS (referred to as MTPS), whilst Group B only received music therapy techniques (referred to as MT). For session 4 to 6 Group A's sessions were conducted making use of music therapy techniques (MT) whilst Group B received music therapy techniques in combination with PCS techniques (MTPS). The two groups' processes were compared with each other in terms of how the participants from both groups learned a new song. A crossover comparative case study method was employed and final themes were identified and linked to relevant literature. This study suggests that both Music Therapy and PCS offered a different learning experience for both groups. When reinforced in combination with each other, a multi-sensory learning experience occurred which offered the participants the tools to be spontaneous, self-expressive and socially and musically flexible thus breaking away from the ritualistic and typical experience of ASD. Both techniques provided the participants with non-verbal and comprehensible cues which promoted and reinforced the recollection of both the songs.

## Keywords:

Autism Spectrum disorder, aided Augmentative and Alternative Communication, music therapy, song learning, Picture Communication Symbols, PCS

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## Chapter 1: Introduction

### 1.1 Background and context

When working in a school setting with learners diagnosed along the Autistic Spectrum, it is often valuable for music therapists to operate in a multi-disciplinary framework (Karkou & Sanderson, 2006:73–4). I believe it is helpful to take into consideration how such learners are taught to communicate at school and home, and to consider the use of music as an additional communicative and therapeutic tool. Music therapy employs music as a therapeutic medium through which alternate forms of communication and self-expression are facilitated (Raglio *et al.*, 2011:135–136). Music is an act of communication that can be employed non-verbally. It is suggested that one is able to interact musically since infancy based on mother-infant communication theory. Thus the use of music as a communicative tool is ideal for those with communicative and social impairments (Schögler, 1998:40).

A picture communication set used with learners diagnosed with Autism Spectrum Disorder (ASD) is the Picture Communication Symbols, referred to as PCS. This system employs the use of line drawings (pictures) as the primary communicative medium. PCS is an aided alternative and augmentative communicative (AAC) set that was designed to assist children with speech and verbal impairment. Pictorial symbols are a two-dimensional system such as line drawings. For the research study, PCS were implemented. PCS consists of a core collection of 4500 clear and comprehensible line drawings. PCS is the most widely used AAC method in South Africa because it allows symbols to be printed and labelled in a child's first language. This is a crucial aspect to be considered in a multilingual context such as South Africa (Bornman & Tönsing, 2014:222–223).

The data collection took place at the Unica School for autism. The learners at the school range in age from three to eighteen years old. The school is situated in Menlo Park, Pretoria. Unica currently caters for 107 learners with ASD. Unica School for autism granted permission for the research study to be conducted at their school (refer to appendix L).

The aim of the research study is to explore and compare the process of learning a new song in a group music therapy setting with learners with ASD, in which two groups were exposed to music therapy techniques (referred to as MT), as well as to the combination of music therapy techniques

and PCS (referred to as MTPS). The aim is to compare the similarities and differences of the song learning process of the two groups, as well as to explore the possibility of integrating PCS into music therapy sessions as an additional communicative aid.

## Chapter 2: Literature review

### 2.1 An introduction: Picture Communication Symbols (PCS) and Autism Spectrum Disorder (ASD)

Autism Spectrum Disorder (ASD) refers to a broad set of diagnoses given to people who display certain combinations of atypical communication, social interaction and restricted repetitive behavioral patterns and interests in activities (Baird *et al.*, 2003:488). Mild to major affective swings frequently occur in autism. These affective swings may arise from sensory and other challenges. Mild to major motor disturbances affect posture and the ability to write and speak, as well as the ability to convey emotions through facial expression. Complications can occur such as movement disturbances that may vary from time to time (Picard, 2009:3575). The diagnostic criteria for ASD in the Diagnostic and Statistical Manual 5 (DSM 5) (2013:50–5) are as follows:

1. Persistent difficulty in the use of verbal and non-verbal communication in a social context, as well as the ability to change communication to match the context or needs of the listener. This also includes the ability to follow rules for conversation and storytelling such as taking turns speaking. The deficit results in difficulty in effectively communicating, participating socially and achieving academically.
2. Repetitive and restrictive patterns of behavior, interests or activities occur, currently or historically, in at least two of the following:
  - 2.1 Stereotyped or repetitive movement, use of objects or speech;
  - 2.2 Insistence of sameness, inflexible to routines, ritualistic patterns;
  - 2.3 Highly restricted or fixated behavioral patterns or interests that are abnormal in intensity;
  - 2.4 Hyper- or hypo reactivity to sensory input or abnormal intensity in unusual interest in sensory aspects of the environment.

The above mentioned symptoms could cause clinically significant impairment in the daily functionality of the person, and affect his/her ability to function socially, occupationally and in other important areas in his/her personal and social life (Passer *et al.*, 2009:831-4).

Clients with communication difficulties require an alternative and universal means of communicating. Therefore, new methods and techniques have been developed and employed to

suit most client's needs. For this research study I will be focusing on Picture Communication Symbols (PCS). As stated earlier, PCS is an alternate communication system developed for non-verbal clients with physical and mental disabilities. For the purposes of this research study, PCS will be discussed in the context of children diagnosed with ASD. PCS is an aided augmentative and alternative communication (referred to as AAC) method. AAC systems can either be aided or unaided. Unaided AAC consists of basic communication aids that do not require any physical devices or visual pictures. This method consists of non-verbal gestures such as nodding yes or no to a question, pointing, writing a message or use of signing or signing dialect. Aided AAC requires the use of fundamental equipment and devices such as communication boards or language boards, pictures and objects to assist the client in communicating. Aided AAC can also make use of electronic devices such as iPad™s. Most individuals with ASD utilize a combination of aided and unaided AAC. In addition to these options, other forms of communicating such as eye gaze, vocalizations, gestures and facial expressions are used. The client is encouraged to utilize all the AAC systems available to promote effective and efficient communication. A multi-modal approach is needed to create a flexible and responsive communicative system for the client in various environments and situations (Gadberry, 2012:151).

PCS, an aided AAC method, consists of the use of symbols and pictures to facilitate communication. PCS consists of a collection of 4500 comprehensible line drawings. Additionally to this core collection of symbols, line drawings also consist of thousands of additional symbols in additional libraries. The symbols can be printed with written labels in different languages, which means that a child can have symbols printed specifically in his/her home language. There are numerous labels designed to fit in an African context; for example, words such as *koeksisters*, *pap*, *kwaito*. PCS has been proven to be effective in the classroom by assisting in teaching material set out according to themes. By facilitating the line drawing method, pupil's receptive language skills are stimulated and extended. Both visual and aural cues are provided, thus offering them a means of expression as they point to the line drawings (Bornman & Tönsing, 2014:223).

## 2.2 Music as a learning medium

As discussed above, PCS is used for both academic learning and social adjustment purposes, specifically with children diagnosed with ASD. In this next section music and its role in learning and social interaction will be discussed.

Rouse (2013:227) explains that there is a strong connection between learning when using multiple sensory modes (such as movement or singing), and the affective brain domain. The affective domain of the brain is described by Pierre and Oughton (2007:1) as “the product of the brain that produces the sense of feelings and emotions that are complex but internally consistent qualities of character and conscience”. These attributes of thought dominated by affective qualities include attitude, self-awareness, biases, ethics, self-esteem and emotional intelligence. These are qualities which are often limited or impaired with children diagnosed with ASD. Rouse (2013:227) explains that, by including high-quality music and/or movement in the learning environment, learners are able to experience the biological, cultural and psychological value of specific concepts. This approach broadens the learning process, and children are more likely to gain a deeper understanding of the topic, and transfer is more likely. From a neurological perspective, both hemispheres of the brain are being stimulated throughout the learning process when including multi-sensory learning methods. By including music and movement, neurological pathways are being created which could have enduring effects that will remind learners of specific concepts or ideas beyond schooling years, i.e. singing the alphabet song when needing to think alphabetically. Music and movement go hand in hand and are used in a multi-sensory manner in music therapy (Rouse, 2013:227).

Kilgour, Jakobson and Cuddy (2000:700) conducted a research study on whether formal music training acts as a facilitator for better recall of spoken and sung lyrics. The research study investigated how 78 undergraduates (half of whom had music training), recalled spoken or sung lyrics. The recall of sung lyrics was far more superior to spoken lyrics in both groups. The overall conclusion was that the participants with formal music training outperformed the participants without music training in all conditions when the lyrics were recalled. This study suggests that training in music could enhance memory of verbal material.

Simpson and Keen (2010:165) investigated how engaging children diagnosed with ASD using taught graphic symbols embedded in an interactive song could be used as a communicative tool, as well as increase the motivation levels of completing tasks. The participants were taught a song where animal names had been embedded, and then asked to match the names with graphical symbols. After they were taught the song, participants were required to correctly select the symbol corresponding to the animal named in the song by touching the symbol on the Interactive Whiteboard. The results suggested that the interactive song facilitated the receptive labelling task

for the participants, and the results remained the same in the tasks that followed. The study concluded that the results were too general and it was suggested that further studies need to be conducted in different contexts in a sense that the study consisted of only three children and time constraints played an important role in the research. Two of the participants did not reach criteria of all five symbols by the time the intervention ceased. The sessions were also delivered in concentrated periods once a week. A more dispersed timeframe for intervention sessions could have enhanced the participants performance and increased the number of symbols acquired.

Taking into consideration the above mentioned studies, it is suggested that music demonstrates the potential to improve and promote learning.

### 2.3 Music therapy as a therapeutic medium for children diagnosed with ASD

There is substantial literature available on research studies focusing on music therapy as an intervention for children diagnosed with ASD. A study conducted by Raglio *et al.* (2011:123) draws on theories of intersubjectivity, with specific reference to mother-infant interaction, affect attunement and regulation, metallization and vitality affects. Within this theoretical framework, the study focuses on an improvisational music therapy approach with a seven year-old boy diagnosed with ASD. The Music Therapy Coding Scheme (MTCS) was the instrument employed to assess and analyses the client-therapist relationship within the context of clinical improvisation. Sessions one, ten and twenty were video recorded and analyzed with reference to clinical, relational and music-therapeutic aspects of the case study. The results report observations related to the patient's non-verbal behaviors. In particular, physical contact, eye contact with each other, attuned movement and approach to the other increased. The behavior of approach to others and to the instruments also showed development, albeit not remarkably. It is of relevance to consider that these behaviors improved, indicating a higher level of relationship, emphasized by increased physical contact with the music therapist, and an increase in the patient's physical movements and eye contact with the music therapist. The patient's attuned movement, observed in the twentieth session during sonorous-musical production, shows his high level of emotional involvement and his meaningful body participation in the interaction. Taking the diagnosis of ASD into consideration, this relational development in the context of clinical improvisation is noteworthy. The study revealed a gradual development and increase of linking consecutive series. This showed an increase in the interactive moments that enriched the relationship during

the music therapy process.

It is important to acknowledge that the above-described communicative affordance of clinical improvisation diverges from typical features of autistic communication (Raglio *et al.*, 2011:135–136). This study, thus, suggests that music therapy offers an alternate communication system, as well as a potential for improved relational and communication experiences, both of which are vital to the process of learning.

A meta-analysis conducted by James *et al.* (2014:222) summarized the conclusions for 12 studies which researched music therapy for individuals diagnosed with ASD. The studies were categorized in terms of: (a) participant characteristics; (b) dependent variables; (c) procedures; (d) results; and (e) certainty of evidence. There were a total of 147 participants varying from the ages three to thirty-eight that participated in the 12 studies. Dependent variables included: (a) decreasing undesirable behavior; (b) promoting social interaction; (c) improving independent functioning; (d) enhancing understanding of emotions; and (e) increasing communication. Specific songs with lyrics related to the targeted skills were used in the music therapy sessions as well as musical improvisations. The outcomes of the studies were classified as positive, negative or mixed. The results were positive for 58% of the studies and 42% were mixed. There was no negative outcome. The conclusion was made that there were certainly noteworthy gains for the treatment condition, in comparison to the control group suggesting an improvement in all dependent variables for all the participants. Certainty of evidence, however, was rated as inconclusive for 58% of the studies (James *et al.*, 2014:222).

Schögler (1998:40) conducted a study that explores music being a non-verbal communicative tool. The study examined how musicians interact with each other musically and creatively thus making music an act of communication. The study focused primarily on the manner in which jazz musician's co-ordinate and communicate musical ideas with each other whilst improvising. For many years music therapists have been employing similar techniques as a means of interacting with clients in a non-verbal manner. An interest in studying these interactions in musical terms were explored. Methods applied to assess these type of musical interactions included the mother-infant communication theory. The mother-infant communication theory suggests that infants can precisely co-ordinate their responses to the intuitive expressive patterns produced by their mothers. In this research study the behaviors of communication and the generative power of musical communication was explored by analyzing the behaviors of both infants towards their

mothers, and improvising jazz musicians.

Schögler (1998:41) explains the importance of a shared pulse. A shared pulse between the jazz musicians or an infant and the mother functions as a fundamental basis for both kinds of cooperative expressive performance. By recognizing temporarily organized behavioral patterns in another person, it is suggested that one's own behavior will become synchronized with others behavioral patterns thus creating a shared pulse. Mother-infant studies suggests that we are born with a natural orientation towards rhythmically coordinated interpersonal interactions. These coordinations allow us to communicate with the world and those around us. It provides us with the tools to socially interact with others.

Schögler (1998:47) maintains that, when jazz musicians accentuate certain notes, they are able to exchange musical ideas non-verbally, and express the direction they wish the music to go within the set musical framework. This is referred to as the 'accent structure' or the 'rhythmical contour' and can be viewed as an expression of musical goals. If a musician shares a similar musical goal, they may indicate it by mimicking or imitating the accented structure of the other musician.

Existing literature suggests that music therapy can play a meaningful role in the therapeutic treatment of children diagnosed with ASD. It is, however, suggested that further research is needed on the generality and tools of music therapy in terms of which ones specifically are responsible for behavioral and social change.

#### 2.4 The use of PCS for children diagnosed with ASD

Tönsing (2015:5–8) conducted a study whose aim was to test the efficacy in which the use of a speech generated device (devices such as iPad<sup>TM</sup>s, computer programs etc. – referred to as SGD), is compared with a communication board by children with limited speech within a shared story reading context. The aim was specifically focused on the production of a multi-graphic symbol combination (agent-action and attribute-entity combinations). In addition, the study also explored the preferences of the children regarding the two systems as well as the perspectives and preferences of the intervention of the team members. The outcomes of the research study were that all four participants showed an increase in the production of two-symbol combination

skills in using both the interventions. No difference for any of the participants was found between the two interventions. The results concluded that children with speech impairments can be taught multiple-symbol combination skills using both systems, and it will be equally effective. The preference acceptance indicated that all four of the participants preferred the SGD during shared story reading (Tönsing, 2015:5–9). The above mentioned study does not necessarily involve children with ASD; however, speech and language impairment is a common symptom of ASD, therefore I find it useful to mention in the literature. This leads me to the next study where ASD and PCS are specifically examined.

Preis (2006:195) conducted a study specifically addressing the language processing impairment of children diagnosed with ASD. This included the auditory processing of verbal information resulting into poor task performance with children diagnosed with autism. The aim of the study was to systematically compare the presence and absence of pictures as an additional aid when giving verbal instructions. All participants were diagnosed with ASD. None of the participants had prior experience in using a picture communication system for the primary purpose of following instructions. The participants only had experienced the use of pictorial communication as an aid in an educational environment such as labelling of rooms or objects, or organization of schedules. All participants portrayed significantly delayed skills in following verbal instructions for their chronological age. At least 48 errors were made during the pre-intervention commands assessment. The results of the study suggests that visual support, specifically PCS, are effective in the promotion and improvement of developing skills in following verbal instructions and directions for children with ASD. However, the study also suggests that the acquisition of verbal commands in either quantity or efficiency of learning were not significantly affected. It is suggested that although PCS did not facilitate more rapid skill acquisition for the instructions and directions, once the participant familiarized and learned the commands, the participants were able to effectively generalize their acquired skills when given the visual prompt of the picture symbols (Preis, 2006:194–195,206). The study suggests that the use of picture symbols can be effective and helpful for children who do not have any prior experience in an AAC system with communication and language process impairments (which is a common symptom of ASD). However, there is still the issue of internalization of the commands that is instead being generalization by the user. This leads me to the next study conducted on iconicity of PCS and children with ASD.

Iconicity in pictorial representations refers to how some pictures are able to inform the viewer

about a specific object or event in the world, i.e. how the picture is being contextualized by the viewer. In order for contextualization to take place, the viewer must have the ability to understand the visual representation corresponding with the elements of reality, even if it is absent at the time of viewing the picture. Iconicity plays an important role in the communication and contextualization skills of a child with ASD. Pictures provide an alternative form of functional communicating in the absence of spoken language (Hartley & Allen, 2015:570). Hartley and Allen (2015: 570–579) conducted a study in which they investigate the ability of children with ASD and language-matched typically developing children to contextualize symbolic information communicated by using pictures in a search task that did not involve work learning. The children completed trials with color photographs, black and white line drawings, and abstract color pictures. The result was that no difference between the groups was found in terms of the influence by visual familiarity. However, both groups made significantly less errors in the process of retrievals of objects in the most-iconic photograph trails. The performance was universally predicted by receptive language. The final conclusion of the study was that both children with ASD and typically developing children are capable of contextualizing pictures and use them as an adaptive guide to learning and behavior in reality. However, the development of their receptive language and the pictorial iconicity plays a significant role and can improve their contextualization skills (Hartley & Allen, 2015:570–579).

Due to the limited documented evidence for PCS used with children diagnosed with ASD, further research is required to further examine its application in multi-disciplinary teams in the milieu of children diagnosed with ASD with symptoms other than speech impairments. Speech impairments are common symptoms of ASD, and therefore studies that focused on speech impairments were discussed as well. It is also clear that more research has been conducted from the perspective of language and speech pathology than the AAC and ASD field specifically.

## 2.5 Conclusion

It is evident that music in an educational setting as well as music therapy in clinical settings can be useful for improving and promoting communication, social interaction and learning skills of children diagnosed with ASD. There are limited research concerning the collaboration between music therapy and augmentative methods of communication such as PCS in the field of ASD. It

is hoped that this case study will contribute to further research and discussion in this regard. Similar to most of the criteria in the literature available on the use of PCS, the study made use of a small sample thus making the outcome applicable to a specific context which is the Unica School's augmentative methods.

## Chapter 3: Methodology

### 3.1 Research paradigm

A qualitative methodology was employed as it allows one to explore a phenomenon, and the observer is given the opportunity to describe his/her personal subjective experiences and views. Semi-structured methods of analysis are used, such as participant observations. Emerging concepts are in the form of themes. The analysis proceeds by extracting themes or generalizations from organizing the collected data to present a coherent and consistent picture of the process and/or outcome of the research conducted. A qualitative methodology was used for collecting and analyzing data for the current study (Kneale, 1999:24–5, Terre Blanche & Durrheim, 1999:42).

The research paradigm employed is interpretive. By using an interpretative approach towards the research problem, the subjective role of being both the participating observer as well as researcher, has been guided through ongoing supervision. The epistemology of interpretive research is based on the internal realities of my own subjective experiences as well as the researching supervisor's during the data collection process (Terre Blanche & Durrheim, 1999:6).

A self-reflexive and critical stance to minimize any form of bias was implemented. Sufficient supervision and peer debriefing was used when categorizing data collected during the process, in order to increase the trustworthiness of the study. The researching supervisor assisted by challenging perceptions and hastily-made interpretations (Ansdell & Pavlicevic, 2001:140).

### 3.2 Research questions

How does music therapy in combination with Picture Communication Symbols (PCS) contribute towards the learning of a new song for children diagnosed with Autism Spectrum Disorder (ASD)?

Sub-questions:

1. What are the observed similarities and differences in the song learning process between the two groups in which music therapy techniques are employed and where music therapy

techniques and PCS are used in combination?

2. How does PCS contribute to the learning of a song in group music therapy sessions with learners with ASD?
3. How do music therapy and PCS function in combination with one another in the learning of a new song with learners with ASD?

### 3.3 Research design

Music therapy sessions were conducted with two groups of children diagnosed with ASD at the Unica School for Autism. For the first three sessions, Group A's sessions made use of music therapy in combination with PCS (hereafter referred to as MTPS), whilst Group B only received music therapy techniques (hereafter referred to as MT). For session four to six Group A's sessions made use of music therapy techniques (MT) whilst Group B received music therapy techniques in combination with PCS techniques (MTPS). The two groups' processes have been compared. A crossover comparative case study method was employed. Gibbs (2008:77–8) explains that one can examine the higher order codes with specific intentions such as looking for patterns, finding comparisons, finding explanations and building models around these findings. For this research study, the differences as well as the similarities within the codes are explored. This method also allows one to explain why and how there are variations and why not. Comparisons as well as the similarities can be identified between different people, objects, scenes, or events. Tables are a common and convenient way to compare and recognize similarities in data. The proposed study can be described as process-centered. A process-centered study attempts to study a process rather than the outcome. The research question and sub-questions are open ended questions, thus placing the emphasis and aim of the study on the process of song learning with different communicative mediums, and not on the outcome of the sessions at the very end of the data collection process. The sessions are conducted by the candidate, as clinician-researcher (Ansdell & Pavlicevic, 2001:135).

Exploratory research is used primarily to make preliminary investigations into relatively unknown areas of a specific field which, in this case, is the use of PCS in combination with music therapy in song learning. This means that an open and reflexive approach to the research study being conducted must be employed, in an attempt to offer new insights into the phenomena (Terre Blanche & Durrheim, 1999:39–40).

### 3.4 Sample

For this study, I used purposive sampling. Purposive sampling is a non-probability sampling technique that allows the researcher to choose the participants, the placement and the scenarios of the study based on his/her own judgment, and according to the needs of the study (Matthews & Ross, 2010:18). Purposive sampling approaches are, in general, associated with small, in-depth studies that aim at gathering qualitative data, exploring and interpreting the experiences and perceptions of the participants (Matthews & Ross, 2010:18). This is an appropriate sampling technique to use in this research because the study is small and was conducted at only one site. The outcome of the study cannot be generalized, rather themes emerging from the analysis articulate the findings of this single case study.

Children of both genders diagnosed with ASD were selected. The participants were selected on the basis of their level of functioning as well as their verbal abilities. The participants were those who are described as the higher functioning students in their academic classes by the teachers. To ensure that all participants are familiar with line drawings, a speech and language therapist at Unica conducted and confirmed symbol assessments for each participant. This guarantees that the participants selected are familiar with the selected line drawings (PCS), which are also used at the school. Additionally, participants needed to a) vocalize sound or be able to use spoken language, and b) be able to understand English. The participants' ages varied from ages 10 to 15 years, as the learners at the school are selected to their academic classes according to their intellectual functioning levels and not on biological ages, thus making the age range of the participants broad. Each session consisted of a maximum of 6 participants per group. The groups were divided based on the participants' school teachers' opinions, as they are able to divide the groups evenly in terms of level of functioning and verbalization skills. PCS are used on a daily bases within the academic classes at the school. The school also has the additional services of a music therapist to provide music therapy should the parents request it. The speech therapist at Unica assisted in the preparation of the communication board with the line drawings of the songs being learned. Inputs were also given by the speech therapist on the vocabulary used in the song to ensure it suited the intellectual abilities of the participants. The music therapist at Unica assisted in assessing and approving the structure of the songs being learned to ensure it is comprehensible for the participants.

### 3.5 Data collection

There were 6 sessions in total for each group: 3 sessions per week were conducted over two consecutive weeks. The duration of each session was more or less 20 minutes. Due to school constraints, the sessions were only 20 minutes long in order to avoid it interfering with the academic classes. Each session started with a greeting song during which interactive singing was facilitated, and each child was being greeted. After the greeting song a short drumming activity took place during which the participants had the opportunity to improvise and take part in turn-taking music making. Thereafter the specific songs chosen for this study were taught using music therapy techniques and music therapy in combination with PCS. The data collection focused on the songs that were taught. The sessions concluded with a greeting song.

The data collection focused on the song learning component of each session. Group A had PCS included for sessions 1 to 3 and only used music therapy techniques for session 4 to 6. Group B consisted of music therapy techniques only from session 1 to 3 and made use of the combination of PCS and music therapy for sessions 4 to 6. This structure for the study assists in the process of comparing the song learning process of both MTPS and MT groups respectively. The two songs that were taught have the same melodic and chord structures. Both songs have the same chorus section that was repeated multiple times. The verses have different words and themes which were taught using line drawings (MTPS) or music therapy methods (MT-only).

During the process, the researcher assumed the dual role of participant observer. Interactive and in-depth descriptions of my experiences of the sessions are described and analyzed (Terre Blanche & Durrheim, 1999:29-33). This research method includes a sense of self-observation and reflexivity. The participating observer is required to take part in a variety of activities such as participation, reflection or documentation. This means that the researcher is required to maintain a balance between participation and also observation during the process of the research study. The researcher must be involved enough to fully understand the process and actions taking place, but also remain detached in order to be able to reflect on the phenomenon under investigation (Matthews, 2010:257-8; Willig, 2001:27-8).

Two methods of data collection were used. Data source A was video recordings of sessions and

data source B were session notes. For data source A, each session was video recorded. Sparrman (2005:241–2) discusses the importance of acknowledging that video-based methodologies create specific ways of viewing and understanding the world, and that making use of video recorded footage as a method of data capturing will influence research studies. The presence of a video camera during a session can be beneficial in many ways but can also create discomfort for the participants. Sparrman (2005:242–4) discusses how video recording can be connected to the performance element in music. The participants can presume the presence of an audience at the other end of the camera while disregarding the audience present in the room. Another disadvantage of using video recordings as a way of collecting data is that the observer can miss out on emotional cues. Very soft sounds or voices may not easily be heard due to background noises. Not all processes or participants may be visible in the recorded material, due to children being scattered around the room (Sparrman, 2005:242–4). However, it is important to keep in mind the purpose of using video recorded footage as a method of capturing data for a research study. In this research study, it does not have an aesthetic purpose and there is no intention of pleasing an ‘audience’, but instead the focus of videoing is to assist in answering research questions. By using this method of data capturing the researcher has the opportunity to have an overall view and to attend to the atmosphere of a situation at the same time. Another advantage of using videotaped sessions is that it provides opportunities for the researcher to refer back to the sessions. With video recordings, any details missed during the session(s) can be viewed again (Sparrman, 2005:241–9).

Data source B was session notes. Terre Blanche and Durrheim (1999:138) suggest that session notes should be assessed as soon as possible after each session because the longer the researcher puts it off, the less he/she will remember the finer details of what happened during the sessions. Terre Blanche and Durrheim (1999:138–9) explain that there are two sorts of note taking in research: the first type is where the researcher describes as fully as possible what happened in the session, and what the participants said or did. It is important to take note of as many verbatim quotes as possible, as it will be helpful in conveying the ‘flavor’ of the session; the second type of note taking is concerned with the unfolding analysis. These notes are primarily for the researcher to elaborate ideas developing about the topic under scrutiny. These notes are the researcher’s own reflections on theoretical, methodological and ethical issues, and also help recording points of uncertainty that need clarification.

### 3.6 Data preparation

Excerpts of the recorded footage were selected with the assistance of supervision in terms of their usefulness in relation to answering the research questions. Thick descriptions of the excerpts were written. The session notes did not require additional preparation. The supervising therapist also acted as a second coder who completed a checklist of the proceedings of the sessions (see Appendix C and D) to ensure that each session was conducted in the same manner.

### 3.7 Data analysis

Qualitative research is used often in the health and wellness field because it offers the researcher rich and compelling insight into the real experiences and perspectives of the participants. Grounded theory can be used in qualitative research studies. Boyatzis (1998:141-59) developed and specified guidelines in a key text which focuses around “coding and thematic development” of thematic analysis. Thematic analysis is a method designed specifically to identify, analyze and report patterns or themes in data. It is minimally organized and describes data in rich detail. Frequently it goes further than this. Thematic analysis interprets various aspects of a research topic (Boyatzis, 1998:141-59).

A constructionist thematic analysis approach is employed as there is no concrete agreement on thematic analysis methodology (Charmaz 2003:93). This means that throughout the process of the study, themes emerge from the data and are not limited to a specific theoretical framework (Braun & Clarke, 2006:85). A thematic analysis conducted within a constructionist framework seeks to theorize the sociocultural context and the structural conditions of the data. The first step in thematic analysis is the process of coding the collected data. Coding is a technical term for analytically labelling collected data. The aim of coding is to break up the data into different sections that are meaningful and applicable to the research question and sub-questions. This step is very important as it is a way of organizing and labelling data that emerge, and reduces the danger of the researcher shaping the outcome of the data in a set shape that will fit the researcher’s bias idea of the results of the study. Comparative methods are used while coding data in order to establish analytical distinctions. Similarities and differences are found in order for the next step to take place in the data analysis (Charmaz, 2003:93). The next step is the categorization of the coded data. Categorizing can be defined as a higher level of organization of

the data collected. It places the coded data into an exclusive 'meaning box' and allows a detailed definition and logical comparison process of the data collected to start taking place (Ansdell & Pavlicevic, 2001:150–3). The most challenging part of employing thematic analysis is to draw the richness of the themes from the raw data, but also to avoid reducing the insights to a trivial level for the sake of consistency of judgment of the data (Joffe & Yardley, 2004:67–8).

## Chapter 4: Ethical considerations and credibility

The primary goal of planning and conducting ethical research is to protect the rights and welfare of the participants in the research study. According to Terre Blanche and Durrheim (1999:67–8) three ethical principles must be taken into consideration. The first is autonomy: this refers to the researcher being required to respect the autonomy of all persons participating in the study. This is honored by the researcher who complies with the ethical guidelines of voluntary participation and informed consent. Before commencement of the study, permission was obtained from the Department of Education (see Appendix N) and the Unica School for Autism (see Appendix L), as well as from the Research Ethics Committee at the University of Pretoria (see Appendix M). Upon approval from the relevant authorities, informed consent was obtained from the parents/guardians of the participants (see Appendix I). Assent letters appropriate and comprehensible for the participants (see Appendix J) were also explained and assent forms were obtained individually (see Appendix K).

The second ethical principle to consider is that of non-maleficence. This means that the research must not do any harm to the participants of the study whatsoever. The researcher honored non-maleficence by treating the participants with respect and dignity, and putting the safety of the participants first at all times during the research. All risks must be explained clearly and formally in the consent forms.

The third ethical principle is that of beneficence. This refers to the researcher designing a study that will be beneficial not only to the researcher, but potentially to the participant as well (if not directly, then indirectly through contributing to knowledge in the field). Confidentiality must be assured within the consent forms for the participants, and therefore no identifiable information will be published in any form during dissemination of results. The consent forms must specify how the data will be captured, stored, processed and released (Terre Blanche & Durrheim, 1999:67–8).

Terre Blanche and Durrheim (1999:69–70) explain the importance of competency, meaning that the researcher must be competent to carry out the research being conducted. Regarding this ethical guideline, I am an HPCSA registered student receiving training in the field of music therapy, and work under supervision.

A further ethical consideration is the dual role I play as the researcher and therapist in the study conducted. Ansdell and Pavlicevic (2001:103–4) explain that each role creates different priorities at different times during the research process. This can either enhance or interfere with the research process. The researcher's role is to place emphasis on the collection of the data and contribute to the specific study field in which the research falls; and the therapist's role is to put emphasis on the client's wellbeing in whichever form it takes place during the research study. Aigen (1993:16) suggests that this dual role can enhance the research process. Aigen suggests that both qualities of the roles, such as intuition, insight, emotional reactions and intellectual judgment can be helpful to 'knowing' and 'sensing' what is necessary to be emphasized during the research process, data collecting and analysis. He suggests that these qualities can assist the researcher in practicing sensitivity and subtlety throughout the research study.

The research paradigm in this study is interpretive. An important aspect of an interpretive approach is triangulation (Terre Blanche & Durrheim, 1999:430). Triangulation refers to collecting data or material in many different ways, and from as many different and diverse sources as possible (Terre Blanche & Durrheim, 1999:430–1). Triangulation assists in exploring the different layers and perspectives of meaning, in order to gain a richer understanding of the phenomenon. It is important to work with the data in context. The analysis of the data collected was supervised throughout the completion of the study, thus employing more than one way of collecting data (Terre Blanche & Durrheim, 1999:127–8). In order to conduct the research in a credible and reliable way, I was supervised by a trained music therapist throughout the research process. This contributed towards conducting the study in a critically reflexive manner.

The findings obtained from this research study will be made available in the form of a mini-dissertation in partial fulfilment of the requirements for a Master's degree in music therapy at the University of Pretoria. A copy of the dissertation will be given to Unica School. The data collected will be archived for 15 years at the Music Department at the University of Pretoria. Formal consent will be required should the data be sought after for any further research purposes.

## Chapter 5: Data analysis

### 5.1 Introduction

As previously stated, the aim of the research study is to explore and compare the process of learning a new song in a group music therapy setting with learners with Autism Spectrum Disorder (ASD). The research study comprised two groups (group A and group B) with participants who matched the above mentioned sampling criteria. Each group had six sessions in total, of which group A's first three sessions consisted of a song learning process using music therapy techniques in combination with PCS. Group B's first three sessions consisted of a song learning process using only music therapy techniques. In sessions 4 – 6 the groups swapped, thus making group A's song learning process. Session 4 – 6 focused on the use of music therapy techniques only; group B's sessions 4 – 6 focused on music therapy techniques in combination with PCS as an aid. Each session had exactly the same structure, comprising a greeting song, followed by a drumming activity. The drumming activity was preceded by the song learning component, which is the focus of the analysis for this study. Each session was concluded with a greeting song.

The song learning process had the following format: the same song was taught to both groups in the first three sessions. Sessions 4 – 6 consisted of a song similar to the first song: the melody remained exactly the same, but the lyrics and theme of the song changed. Video footage as well as session notes were the main data capturing method. The data analysis will be discussed in detail in the following section.

### 5.2 Transcription of recorded footage

The first step of the data analysis process was to transcribe the recorded footage into detailed descriptions of all aspects that took place during the song learning activity. The benefits of using video recorded material as a data collection method is that it afforded the opportunity to refer back to the sessions multiple times thus, ensuring that thick descriptions and transcriptions were as accurate and detailed as possible (Sparrman, 2005:241–4). Note that only the song learning activity in the sessions were transcribed, as per the aim and research questions governing the

study.

The transcription will refer to 'MTPS' to indicate the sessions in which music therapy was used in combination with PCS. The transcription referred to as 'MT-only' will indicate sessions which employed music therapy techniques only.

The following example (Appendix O: A, Line 1 – 4) is the transcribed video footage of Group A (MTPS) in session 1 with PCS as an aid:

Figure 5.2.1: Transcribed thick descriptions group A (MTPS)

A	Under the water
18-Apr-16	Session 1 Group A (MTPS)
Time (minutes into session)	Transcribed sessions
9:20	
Line 1	I show the board with the picture symbols to the participants
Line 2	Tshepo and Jack lean forward in their seats to look closer at the symbols to see the PCS better, they seem very focused on the board
Line 3	The first symbol I point to is the symbol of the word "under"
Line 4	I ask the participants what word the picture symbol represents

The following example (Appendix P: B, Line 1-4) is the transcribed video footage of group B (MT-only):

Figure 5.3.2 Transcribed thick descriptions group B session 1 without PCS

B	Under the water
18-Apr-16	Session 1 Group B (MT-only)
Drumming activity	
11:07	
Line 1	I explain that we are going to sing a song about the sea

Line 2	Lisa and Tom comment about the sea by saying it is very far and that one can build sandcastles in the sand when they go to the sea
Line 3	I softly strum the guitar
Line 4	The tempo is moderately slow

### 5.3 Coding of transcriptions

The following step in thematic analysis is transcribing the data into codes. Coding is a technical term for analytically labelling the collected data. It breaks the data up into different sections that are meaningful and applicable to the research question and sub-questions (Charmaz, 2003:93). Once the transcribing of the video footage was complete for all twelve sessions, the next step was to organise each transcribed line into segments. The following examples (Appendix O: A, Line 1 – 4) illustrates the coding step:

Figure 5.3.1: Transcriptions and codes

A	Under the water	
18-Apr-16	Session 1 Group A (MTPS)	
Time (minutes into session)	Thick description	Code
9:20		
Line 1	I show the board with the picture symbols to the participants	
Line 2	Tshepo and Jack lean forward in their seats to look closer at the symbols to see the PCS better, they seem very focused on the board	A2a) Participants interested in PCS A2b) Participants focused on PCS
Line 3	The first symbol I point to is the symbol of the word "under"	A3a) Therapist direct attention to PCS
Line 4	I ask the participants what word the picture symbol represents	A4a) Therapist ask participants question about PCS

Figure 5.3.2 (Appendix P: B, Line 1-4): Transcriptions and code

B	Under the water	
18-Apr-16	Session 1 Group B (MT-only)	
Time (minutes into session)	Thick description	Code
11:07		
Line 1	I explain that we are going to sing a song about the sea	
Line 2	Lisa and Tom comment about the sea by saying it is very far and that one can build sandcastles in the sand when they go to the sea	B2a) Two individuals associated with real life memories
Line 3	I softly strum the guitar	B3a) Therapist strums guitar softly
Line 4	The tempo is moderately slow	B4a) Therapist strums guitar slowly

#### 5.4 Coding segments into higher order codes

The next step was to organise the coded segments into higher order codes. This process is a higher level of organisation of the data collected. This process allowed a logical comparison of the collected data to take place (Ansdell & Pavlicevic, 2001:150–3). Examples (Appendix AD table 1: Line A16a) illustrate the further organizing of the codes:

Figure 5.4.1: Higher order codes for MTPS sessions (See Appendix AF table1)

<b><u>Tempo</u></b>
A21a) Participants sing softly and slowly
A27a) Participants sing softly and slowly
C47a) Indiv participant strums guitar slowly, loudly and clearly
C48a) Participants spontaneously sing song slowly and loudly

C51b) Indiv strums at a slow and uneven tempo  
C70a) Indiv participant strums guitar moderately loud and slowly paced

Figure 5.4.2: Higher order codes for MT-only sessions (See Appendix AF table 1)

<b>Tempo</b>
G20a) The music is moderately slow D77a) Indiv participant strums fast paced D85b) Indiv participant strums loud and at a presto tempo
D93a) Indiv participant strums guitar slowly and gentle D94a) Indiv participant strums guitar fast and lively D96a) Indiv participant fastens tempo

The higher codes were further organised into categories as illustrated in the table below:

Figure 5.4.3: Organised higher order codes (See Appendix AF table 1)

MTPS Sessions		MT-only Sessions			
Characteristics of the music					
<b>Tempo</b>	<b>Tempo</b>	<b>Rhythm</b>	<b>Rhythm</b>	<b>Dynamics</b>	<b>Dynamics</b>
A21a) Participants sing softly and slowly	G20a) The music is moderately slow	C50b) Indiv participant struggle to keep steady beat	D43a) Indiv participant says words rhythmical	A16a) Participants sing softly	B18a) Participants sing with therapist softly
A27a) Participants sing softly and slowly	D77a) Indiv participant strums fast paced	C51b) Slow uneven tempo strumming	D46b) participants says words rhythmically	A21a) Participants sing softly and slowly	B21a) Participants sing softly
C47a) Indiv participant strums guitar slowly, loudly and clearly	D85b) Indiv participant strums loud and at a presto tempo	C53a) Indiv participant strums guitar in a steady beat	D96b) Indiv participant plays scattered rhythm	A27a) Participants sing softly and slowly	B32a) Participants sing/mumble words softly

C48a) Participants spontaneously sing song slowly and loudly	D93a) Indiv participant strums guitar slowly and gentle	C58a) Indiv participant strums guitar softly, gentle and rhythmical	K22a) Indiv strums guitar rhythmically moderately fast and lively	A32a) Participants sing softly with therapist	B48b) Participants sing louder and pronounce words clearer
C51b) Indiv strums at a slow and uneven tempo	D94a) Indiv participant strums guitar fast and lively	C70c) Indiv keeps steady beat		A37a) Participants sing softly	B63c) Two participants sing very softly
C70a) Indiv participant strums guitar moderately loud and slowly paced	D96a) Indiv participant fastens tempo	C84c) Indiv participant taps rhythm of song on his lap vigorously		A57a) Participants sing moderately loud	B75a) Participants sing emphasize words loudly

### 5.5 Extracting of final themes

The final step was to organize the higher order codes into themes which form the basis for the final discussion and conclusion of the research study. This was the most challenging part of the thematic analysis, since it was essential that the identified themes capture the essence of the data. This process allowed me to draw the richness of the collected data and organize them into themes (Joffe & Yardley, 2004:67–8). Figure 4.5.1 provides a summary of emerging categories and themes.

Figure 5.5.1: Final themes

<u>Recollection</u>	<u>Music as song learning aid</u>	<u>PCS as song learning aid</u>	<u>Learning outcomes</u>	<u>Inter-personal engagement</u>
Recollection of song	Cross-modal interpretation of music	PCS identification	Focused attention	Therapist's interactive role
Recollection of lyrics	Therapist's musical role		Rehearsal of song	Part quality of participation
Recollection of melody	Characteristics of the music		Seeing and doing	
	Vocal participation		Word concept formulation	

	Pronunciation		Learning process in sessions	
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## Chapter 6: Discussion

The aim of the research study was to explore the use of PCS and music therapy in combination, in learning a new song for children diagnosed with ASD. The similarities and differences in the song learning process using MTPS and MT-only were analyzed as per the previous chapter. In this chapter I will discuss the findings of this study. I will discuss each of the five themes individually by exploring the higher order codes from which they were derived. Each theme will be discussed in terms of the research question and sub-questions, and also linked to the literature review discussed earlier in the study. These findings form the final stage of analysis as I now begin to expand on the themes.

### 6.1. Theme 1: Recollection

#### 6.1.1 Recollection of lyrics

The first theme to emerge from the data was the recollection of the song throughout the learning process. It seems that overall the participants remembered the lyrics better in the MT-only sessions than the participants in the MTPS sessions. There were more occurrences within the sessions where the participants remembered the lyrics by memory (see Appendix AB table 1: MT-only, Line *B94a*) *Indiv participant remembers verse words*; MTPS, Line *G32f*) *Participants remembers chorus lyrics and melody with ease*). However, during the chorus section the participants in the MT-only sessions seemed to forget the order of the animals being greeted in the song (see Appendix AB table 2: MT-only, Line *D112b*) *Indiv forgets order of animals being greeted, shouts out wrong animal*). The data indicates that PCS provided a non-verbal visual reminder of the order of the animals for lyric recall during the chorus section, thus making it easier for the participants to remember the order of the animals being greeted. The data further suggests that forgetting the order of the animals or the names of the animals being greeted did not occur during the MTPS sessions (see Appendix AB table 2: MTPS). As discussed in the literature review on page 12 earlier, Kilgour, Jakobson and Cuddy (2000:700) conducted a study to determine whether formal music training facilitates better recall of spoken or sung lyrics. The results indicated that the sung lyrics were recalled more frequently than spoken lyrics, suggesting that training in music could enhance verbal memory. In this research study the participants had no

formal musical training; however, through singing and rehearsing the lyrics by singing instead of speaking it facilitated the recall of words.

Returning to the current study, the data suggests that the music itself acted as a facilitator for the memorizing of lyrics more efficiently during MT-only sessions than MTPS sessions. However the PCS acted as non-verbal and visual lyrical reminders, which assisted with the recollection of the order of the animals being greeted. Tucker (2007:4–5) explains that music educators must make use of different organized teaching models to enhance learning. One of the fitting models to consider for this study is the organized model of sequential learning. Sequential learning is the process of sequencing effective instructions, modeling and gestures, asking questions, feedback systems and verbal imagery (Tucker, 2007:4–5). In this study sequential learning took place as various learning styles were employed. The learning material was systematically explained, modelled and visually and aurally presented using both music and PCS in combination. Both music and PCS in combination provided the song learning process with the above mentioned tools. It is suggested that combining the above methods contributed towards the better recall of sung lyrics, in which both music and PCS acted as learning facilitators.

Uncertainty of lyrics occurred mostly during the first two sessions in both groups, suggesting that it was part of the learning process of a new song (See appendix AB table 3: MTPS, Line *A48d*) *Participants unsure about the words*; MT-only, Line *B32b*) *Participants unsure of chorus words*). The data indicates a higher level of recollection of musically emphasized words in MT-only sessions, which might be due to emphasizing of key lyrics being accentuated through various musical techniques (see Appendix AB table 1: MT-only, Line *B35c*) *Participants remember emphasized words in verse most*). PCS provided visual cues as a learning tool, and the facilitation of various emphasized musical elements facilitated better sequential recall of the lyrics. As explained in the literature review earlier on page 14-15, Schögler (1998:47) argues that jazz musicians make use of accentuated notes in order to exchange musical ideas non-verbally. This is referred to as the ‘accent structure’. By accentuating certain notes, they are able to express the direction they wish for the music to go within the set musical framework. If the other musicians share a similar musical goal, they can indicate it by mimicking or imitating the accentuated structure of the music. In this research study, the therapist accentuated the key lyrics in the songs using her voice. She also accentuated the pulse on which these words were sung through the

guitar accompaniment. In addition, the therapist physically rocked her upper body to these accentuated pulse of the music. In return, the participants mimicked or imitated her physical movements as well as her singing of accentuating the key lyrics. It is suggested that this could have contributed to better recollection of the sung lyrics, as a musical goal was shared between the therapist and the participants.

When the groups swapped song learning techniques, the recollection of some of the first song taught in the MTPS sessions' lyrics were remembered better by the MT group during the learning of the second song, which was taught using only MT techniques (see Appendix AB table 3: MTPS Line *H45c*) *Indiv participant immediately remember words of previous song*). As explained earlier in the literature review on page 16, Preis (2006:194) conducted a study which specifically addressed the language processing impairment of children diagnosed with ASD. It was suggested that children with autism show more strength in visual perception, memory and spatial relationships than with auditory stimulus. It is suggested that a child with autism tends to memorize visual information and complete tasks easier when visual spacial judgement is involved. The current study might suggest that, with the PCS providing visual cues in combination of the aural cues music offers, the participants were able to recognize the similarities between the old and the new song, thus transferring previous learned knowledge to a new concept.

#### 6.1.2 Recollection of melody

The MT-only group seem to recollect the song's melody better than the MTPS group, as there are more occurrences in the data indicating it (see Appendix AC table 1: MT-only, Line *B114a*) *Participants remembers melody*). The melody, which remained the same throughout both songs, provided flow to the sequential learning of lyrics, which may assist learners with ASD to learn in new ways. Symptoms of ASD include repetitive behavioral patterns in activities and with objects (DSM5 2013:50–5). The melody remained the same throughout both song learning processes; thus, it is suggested that the participants were comforted by having some form of sameness, and that the melodic structure could have assisted in creating a safe, familiar space for the participants to learn creatively and spontaneously. Keeping the session structures consistent may also have contributed to this outcome.

### 6.1.3 Recollection of song form

Participants in the MT-only sessions, in contrast to the participants in the MTPS sessions, remembered the song form with ease (see Appendix AA table 1: MT-only, Line *G40d*) *Indiv remembers song form*). In many occasions the song form was completely forgotten, and the individual participants would direct attention to the incorrect PCS because he/she is uncertain of the song form. In contrast to that, there was no indication in the data of the song form ever being forgotten during the sessions where only music therapy techniques were employed, as shown in the following coded data (see to Appendix AA table1: MTPS, Line *J59a*) *Indiv forgets repeat of the verse section*; MTPS, Line *E114a*) *Pointing indiv does not go back to verse section*). As mentioned above, and as described by Schögler (1998:40–1), music is a non-verbal communicative tool. The music itself provided non-verbal cues that offered the participants a concrete framework in which the form of the song was easily remembered. The music and the song itself provided the form of the song. PCS also provides non-verbal cues presented visually. Used in combination, MT and PCS provided a multi-sensory learning experience, as both visual and auditory learning techniques were employed. This learning experience can be referred back to Rouse's (2013:227) explanation of “multi-sensory learning”. A multi-sensory learning experience can provide a broader learning process and a deeper understanding of a topic can be obtained throughout the learning process.

## 6.2 Theme 2: Music as learning aid

### 6.2.1 Facilitating cross modal learning

The analyzed data suggests that cross-modal interpretation of the music took place during the song learning process. Throughout the sessions, and in both groups, there were various physical interpretations of the music. There were many energetic and rhythmical-physical movements such as swinging of arms and legs, and hand gestures related to the music. The data suggests that the interpretations of the music through movement took place primarily during the second and third session for the MTPS sessions. There are very few occasions where this interpretation through physical movement took place during the first MTPS session for both groups (see

Appendix AD table 1: Line MT-only, *B63a) Indiv makes arm movements matching the pulse of the music*; MTPS, Line *C36a) Indiv participant claps hands to the pulse of the music*). The MT-only sessions seem to have more occasions in every session for both groups, where participants interpreted the music, matching the pulse or the theme of the song, by physically moving their bodies (see Appendix AD table 1). This suggests that the music provided the participants with an alternative manner to be expressive and engage spontaneously and playfully within a group context. The participants could partake in a different manner because the music was used flexibly in terms of adapting different modalities to the learning experience, which in this case was movement.

As reported in the literature review on page 12, Rouse (2013:227) argues that there is a strong connection between learning and the affective brain domain when making use of multiple sensory modes, which includes movement or singing. Pierre and Oughton (2007:1) define the affective domain of the brain as “the product of the brain that produce the sense of feelings and emotions that are complex but internally consistent qualities of character and conscience”. These qualities include attitude, self-awareness, self-esteem and emotional intelligence: all these qualities are limited or impaired with children diagnosed with ASD. In the case of this research study, the physical movements included spontaneous swinging of arms and legs or hopping in their chairs to the pulse of the music. As stated previously, when used in combination, PCS and MT also afforded cross-modal learning in the form of visual and aural cues, which facilitated recall of song lyrics by both groups, a deeper understanding of the song and transfer (see Appendix AD table 1: MTPS, Line *C36a) Indiv participant claps hands to the pulse of the music*; MT-only, Line *B77a) Participant emphasize syllables of word by swinging arms to the pulse of the music*). This also contributes to the approach of the therapist, which is explained in the following sub-heading.

### 6.2.2 Therapist’s role in facilitating the music

The therapist used music in a flexible manner for both MT and MTPS groups. Both groups responded in a similar fashion, such as adjusting their quality of singing and playing. There were, however, differences between the groups. The data revealed that the therapist used the basic elements of music such as tempo, dynamics and rhythm in a more flexible, creative, and

interactive manner during the MT-only sessions. They also clearly indicate that the tempo, dynamics, characteristics of the guitar strumming and overall quality of participation of the therapist shifted during the MT-only sessions (see Appendix AE table 1: MT-only, Line *B3a) Therapist strums guitar softly*; MTPS, Line *E131a) Therapist strums guitar moderately fast and lively* MT-only, Line *B39a) Therapist increase tempo of guitar strumming*; MT-only, Line *B4a) Therapist strums guitar slowly*). Playful, engaging, spontaneous and unpredictable music techniques were included, in order to enhance the song learning process, especially since the visual cues of PCS were not present in these sessions. Whilst the therapist applied the same techniques in the MTPS sessions, the data indicates this on fewer occasions than during MT-only sessions (see Appendix AE table 1).

Throughout the sessions, the therapist used non-verbal musical, as well as aural cues, as a means of communicating with the participants. When used in combination, they served as a multi-modal approach that was needed to create a flexible and responsive communicative system for the participants during the song learning process. However, the results indicate that the use of PCS as a visual cue might have restricted the flexibility of the therapist's musical engagement and the music itself, because the participants practiced joint attention by having to read PCS and adjust to the sudden musical shifts at the same time. This suggests that the music shifted less in the MTPS session because more preparation had to be done by the therapist to prepare the participants for sudden music shifts.

Chawarska *et al.* (2015:534–544) maintain that attention is driven by a condition-independent tuning into the dynamics of a social scene and context-specific constructs. ASD is commonly characterized by a limited tuning into social scenes and also by a selection of atypical targets for processing these social scenes. It is suggested that children diagnosed with ASD tend to react in such situations by not necessarily paying attention to key distinctions between social or non-social stimuli, but rather by selection of particular aspects of a social or non-social scene that is observed to be most relevant to the task at hand. In the context of the current research study, the participants struggled to multi-task during the MTPS sessions, when asked to strum the guitar additionally whilst singing and reading the PCS, but none reports of struggling with joint attention when strumming the guitar and singing the songs from memory during the MT-only sessions were observed in the collected data. This might suggest that the participants were able to select the

most relevant task during the song learning process, which was singing the lyrics of the songs. The MT-only sessions had less visual and aural and kinesthetic stimuli that were expected to be completed at the same time than the MTPS sessions thus making it easier for the participants to observe and pay attention to the most relevant tasks at hand.

### 6.2.3 Participants' and therapist's musical participation and interactive roles

The therapist used techniques of the Creative Music Therapy model called mirroring, matching and reflecting. The Creative Music Therapy model founded by Paul Nordoff and Clive Robbins focuses on the non-verbal aspects of clinical improvisation. This approach is applicable for both individual and group music therapy, and can be described as the process whereby a therapist and a client improvise together to address a variety of clinical goals. Clinical improvisation is the basis for assessment, treatment plans and ongoing evaluation. (Wigram *et al.*, 2002: 126 – 9). The data indicated that variations in participants' tempo and dynamics were in relation to changes in tempo and dynamics introduced by the therapist (see Appendix AF table 1: MTPS, Line A21a) *Participants sing softly and slowly*; MTPS, Line C53a) *Indiv participant strums guitar in a steady beat*; MT-only, Line D77a) *Indiv participant strums fast paced*; MT-only, Line B21a) *Participants sing softly*). The therapist adjusted and intervened during the song learning process by mirroring and matching the participants singing and playing, in order to musically interact with them. The therapist intervened often by shifting the tempo and dynamics to a different tone quality. It was however all on the participants' terms and with what suited them musically best. Pavlicevic (1991:3–4) explains that the common pulse between the therapist and participants has various possibilities for meeting the rhythmic component of each other's playing. This can be defined as mirroring and matching. Mirroring refers to the one partner reflecting the other partners playing by strictly imitating the rhythm within a common pulse, meter and tempo variations. This means that partner A does exactly what partner B does, at the same time. Matching refers to one partner corresponding the other when some, but not all, of the rhythmic components are mirrored exactly. Matching can be thought as partial mirroring. Reflecting occurs when the pulse and tempo variations are shared but the meter and rhythmic pattern is not necessarily common to both players. The participant's tempo and dynamics seem more flexible and energetic in the MT-only sessions (see Appendix AF table 1). This does not suggest that the participants were not flexible in terms of tempo and dynamics of their singing, and playing during the MTPS sessions but the data suggests a higher occurrence during MT-only sessions (see Appendix AF table 1). The

quality of the participants singing varied from loud to very soft and they were able to adjust the tempo and dynamics of their singing with ease during musical interventions.

The therapist's interactive role played a significant part in the song learning process. The therapist's body language was engaging, and used as a non-verbal tool to assist in the song learning activity. The therapist's non-verbal interactions consisted of strumming the guitar, and by doing so she provided non-verbal musical cues or supporting an individual or the group musically by meeting and matching their singing. Non-verbal interaction between the therapist and the participants took place in both MT-only and MTPS sessions (see Appendix AN table 1: MTPS, Line *C49a*) *Therapist support indiv participant musically*; MT, Line *B33a*) *Therapist attempts to shift energy of the music*). There was more non-verbal modelling of strumming of the guitar or pointing to the correct PCS during the MTPS sessions than during the MT-only sessions (see appendix AN table 2: MTPS, Line *E56a*) *Therapist assist indiv participant by modelling pointing to PCS*; MT, Line *D65a*) *Therapist models strumming of guitar*). Schögler (1998:40) explains that musicians use music as a non-verbal communicative tool to interact and co-ordinate musical ideas amongst each other. Music therapists' make use of clinical techniques as a means to communicate and interact with clients non-verbally, as discussed in the literature review on page 14. The music itself was inviting, and provided the framework for the participants to engage spontaneously and to be self-expressive. The PCS also provided non-verbal cues, specifically when the therapist pointed or modelled the pointing to the appropriate PCS. The PCS provided a very clear and structured sequence of the lyrics being sung, by making use of visual imagery to which the therapist's role of pointing and modelling the pointing to the PCS assisted in facilitating a multi-sensory learning experience.

The therapist's verbal interaction was reinforced during both the MT-only and MTPS sessions. The verbal interactions included giving verbal cues of when to start singing, or verbally predicting the lyrics. Only during the MT-only sessions did the therapist verbally reminded the participants of the lyrics (see Appendix AN table 2: MT, Line *B109a*) *Therapist verbally prepare participants of next sung lyrics*). The therapist also engaged in verbal affirmation and acknowledgement of an individual or the group's musical offerings and efforts by means of verbal praise during both MT-only and MTPS sessions (see Appendix AN table 2: MTPS, Line *J48a*) *Therapist verbally thanks volunteer indiv*; MT, Line *D64a*) *Therapist verbally acknowledges indiv participants imitation of a*

*dinosaur*). The therapist also verbally invited participants to sing, and strum the guitar during both MT-only and MTPS sessions. During the MTPS sessions, the therapist verbally invited individual participants to point the PCS on the communication board to the rest of the group (see Appendix AN table 3: MT, Line C91a) *Therapist invite indiv participant to point to PCS*). Overall the therapist seems to have verbally invited participants to sing on more occasions during the MT-only sessions. There also seem to be a lot more verbal praise and affirmation from the therapist during the MT-only sessions (see Appendix AN table 2: Therapist's verbal interaction). During both the MT-only and MTPS sessions the therapist also asked song-related question to the participants (see Appendix AN table 6).

The participants portrayed a very good sense of rhythm during the MTPS. Pointing to the PCS was combined with the rhythmic aspects of the song, supported by the therapist on guitar (see Appendix AF table 1: MTPS, Line J90a) *Pointing indiv match group singing rhythmically when pointing PCS*; MTPS, Line E59b) *Indiv responds to music by rhythmical tapping of the finger on the PCS*). Overall both groups during both songs verbally spoke the lyrics instead of singing along with the accompaniment. The quality of the speaking of the lyrics matched the rhythm of the music (see Appendix AG table 1: MT-only, Line D46b) *Participants say words rhythmically*; MTPS, Line C27a) *Speaking of lyrics instead of singing*). It is suggested that the rhythmical elements of the music provided a framework in which the pointing to PCS and speaking of the lyrics were organized and performed in a rhythmical fashion.

#### 6.2.4 Qualities of pronunciation and vocal participation

On many occasions during the sessions, both groups mumbled the lyrics. The MTPS sessions seem to demonstrate this less than MT-only sessions (see Appendix AP table 1: MT, Line B19a) *Mumbling of words*; MTPS, Line A22a) *Mumbling of words*). This might suggest that, due to the absence of PCS, the participants seem less sure of the lyrics because they were solely dependent on memorizing the lyrics during the MT-only sessions. This could also suggest that the participants were still in the process of learning the lyrics and the uncertainty of the lyrics is what kept them from singing more confidently. It would seem that the participants were able to recognize and remember the lyrics more easily in the MTPS sessions, as the visual cues served

as an immediate reminder of the lyrics. The data suggests that there were more occasions during the MT-only sessions where the participants pronounced the lyrics very clearly (see Appendix AP table 1: MT-only, Line *B48b*) *Participants sing louder and pronounce words clearer*). The data also suggests that there were occasions where the singing and pronunciation of the lyrics are clear in the MTPS sessions, albeit with less prevalence. The therapist's sung pronunciation of the words also played a role. The therapist made a point of pronouncing the lyrics very clearly, and some of the words were specifically emphasized to assist in the learning process of the song for the MT-only sessions (see Appendix AP table 1: MT-only, Line *B40c*) *Therapist pronounce words clearly*).

The data indicates that there was more vocal (singing) participation, from both groups during the MT-only sessions. Specific singing qualities emerged with both MTPS and MT-only groups. Overall, the participants' singing could be described as varying from monotonic and low in energy to energetic and playful in both MTPS sessions and MT-only sessions. The data indicates that during the MT-only sessions the singing qualities shifted and varied from low energy and monotonic singing to energetic and playful on more occasions than the MTPS sessions (see Appendix AG table 1: MTPS, Line *A62b*) *Participants sing with monotonic tone quality*; MTPS, Line *C14a*) *Participants sing loudly and lively*; MT-only, Line *B19b*) *Low energy participation and singing*; MT-only, Line *B74a*) *Participants sing with enthusiasm and high energy*). The monotonic and low energy singing, limited in varied emotional expression, can be linked to the common symptoms of ASD, which include difficulties in conveying emotions through facial expressions or spoken or sung language (DSM 5:50-5). There were occasions in both groups during which the participant's quality of singing was expressive, lively and melodic. In a study conducted by Raglio *et al.*, (2011:135-6) in the literature review on page 13-14, music therapy sessions with a child with autism resulted in an increase in physical contact, approach to others, eye contact and attuned movement through musical participation. The child's emotional involvement and communicative body language within the interactions increased over twenty sessions.

In this research study, the participants seem to be more self-expressive through their singing. The quality of their singing along with the accompanied physical movements increased and grew more meaningful throughout the sessions. Raglio *et al.* (2011:135-136), in the literature review on page 13-14, came to the conclusion that music can improve relational and communicative experiences

for children diagnosed with ASD, which could also be observed in the data. The participant's quality of singing shifted from monotonic and flat qualities (as expected from a child with ASD) (DSM 5:50–5) to melodically and expressive qualities. There were also very few occasions where lyrics were spoken instead of sung during both MTPS and MT-only sessions. The results suggest that the participants were able to express some form of emotions through singing by shifting their overall quality of singing. Referring back to Pierre and Oughton (2007:1) in the literature review on page 12, a deeper learning experience might have taken place. The affective brain domain were linked with a multi-sensory learning experience, which Pierre and Oughton (2007:1) explained to be “the product of the brain that produces the sense of feelings and emotions that are complex but internally consists of the qualities of character and conscience”. This suggests that a multi-sensory learning experience of MT and PCS, used in combination, accessed the parts within the participants and allowed them to be self-expressive and musically flexible.

### 6.3 Theme 3: Picture symbols as learning aid

#### 6.3.1 PCS recognition and iconicity

The next theme to be discussed is a reflection on what PCS contributed towards the learning process during the MTPS sessions only. The data suggests that both groups were able to recognize each PCS with ease throughout the learning process, and that they were very dependent on the PCS for recall of the lyrics during the rehearsals of the song (see Appendix AH table 1: MTPS, Line A9a) *Participants recognize PCS with ease*; MTPS, Line A86a) *Participants dependent on PCS*; MTPS, Line L2b) *Participants immediately recognize PCS with ease*). Both songs seemed to employ PCS that were highly iconic, which might have contributed to the recollection of the lyrics with ease and immediacy. Hartley and Allen (2015:570) explains in the literature review on page 17 the function of pictures that are high in iconicity when working with a child diagnosed with ASD. Iconicity in a pictorial representation refers to how a picture is able to inform the viewer about a specific object or subject. This means that the viewer is contextualizing the pictures. For the contextualization to take place, the viewer must be able to understand the visual representation corresponding with the elements of reality, even if it is absent at the time of the viewing of the picture. Iconicity plays an important role in the communication and contextualization's skills of a child with ASD. In this study, the pictures were carefully selected to ensure that the participants would be able to contextualize it as best as possible. The participants

recognized the PCS with ease, as indicated in the data, and they were able to contextualize it with ease, as well as they were able to make their own association to it (see Appendix AH table 1: MTPS, Line *A5b*) *Participant associates PCS with own meaning*; MTPS, Line *J15a*) *Indiv associated own meaning with intended PCS*). In both groups there were a few instances where participants assigned their own personal meanings and associations to the picture symbols. These associations were expressed verbally or by physical movements such as imitations of the animals being greeted, or an action such as swimming, as shown in the coded data (see Appendix AH table 1: MTPS, Line *C8a*) *Indiv associates own PCS meaning with movement*).

Whilst the therapist facilitated the reading of PCS by pointing to the symbols, there were occasions when the participants were invited to read the PCS themselves while simultaneously singing the song (see Appendix AH table 3: MTPS, Line *L51a*) *Therapist verbally invite participants to read PCS by themselves*). This was accomplished with ease. Individuals were invited to point to the PCS and had no trouble assisting each other by non-verbally modelling the pointing method to a participant who did not completely grasp the task. Overall, the participants in both groups managed to point to the correct PCS at the right time during the song (see Appendix AH table 2: MTPS Group A, Line *C97a*) *Indiv participant directs attention to PCS*; MTPS Group B, Line *H107a*) *Indiv participant directs attention to PCS*). There were few occasions where individual participants pointed to the incorrect PCS at the incorrect time (see Appendix AH table 4: MTPS, Line *C101a*) *Indiv participant points incorrect PCS*; MTPS, Line *E48a*) *Indiv participant direct attention to incorrect PCS*). The therapist's main role comprised pointing to the PCS, non-verbally modelling the pointing to the correct and appropriate PCS, as well as verbally inviting the individual participants to point out the appropriate PCS for the rest of the group (see Appendix AH table 3: MTPS, Line *C29b*) *Therapist direct attention to PCS*). Gadburry (2012:151) explains in the literature review on page 11 that PCS is an alternative means of communicating for clients with language or communicative impairments. Here this form of AAC was used as a visual, non-verbal cue for remembering song lyrics. The use of a communication board and the organization of the PCS on the board made it comprehensible for the participants to eventually read the PCS by themselves, as well as point to the appropriate PCS during the song learning process. This implies that the communication board, as well as the PCS, could also be a tool for structuring and providing a set framework for participants with communicative impairments. PCS provided additional and comprehensible non-verbal and visual cues, which contributed towards having a full and meaningful learning experience. The participants experienced a multi-sensory learning

process with visual aids they were very well familiar with and could relate to with ease.

## 6.4 Theme 4: Learning outcomes

### 6.4.1 Focused attention

The next theme that emerged was the learning outcomes of the song learning process, the first of which is focused attention. The data indicates that, throughout the MTPS sessions, participants focused their attention on the PCS communication board during the rehearsals of the song (see Appendix AI table 1: MTPS, Line *A2b*) *Participants focused on PCS*). The data also suggests that there was less focus on the music itself during MTPS sessions (see Appendix AI table 1). MT-only sessions seemed to facilitate an increased focus during the song learning process, especially through music modelling by the therapist, as well as her use of the guitar (see Appendix AI table 1: MTPS, Line *B76e*) *Participants focus on therapist and music*).

As explained above, the PCS provided a non-verbal and visual means of communicating and learning to which the participants had to pay attention to in order to take part in the activity. Preis (2006:194) in the literature review on page 16, conducted a study in which it is suggested that visuospatial processing is superior to auditory processing skills for individuals with autism. It is important to recognize that the auditory processing being referred to in that study consisted of verbal instructions using spoken language. In this research study, the use of music and the learning of a song were implemented, in which specific music therapy techniques were employed. As indicated in the MT-only sessions (see Appendix AI table 1), music served as a learning reinforcement as the basic elements of music itself such as tempo, dynamics, and melody were used in a flexible and creative manner that kept the participants focused. It created multiple opportunities to repeat the song without it being too repetitive, because the music was able to change and shift, thus making every repeat of the song different than the previous one. Because the music was shifting and changing unpredictably, the participants' attention remained on the music during the MT-only sessions. Both techniques served to keep the participants interested and engaged in different ways throughout the song learning process, as there seem to be few occasions where the participants lost focus on the activity and the therapist, due to other distractions in the room (see Appendix AI table 3: MTPS, Line *H77d*) *Participants distracted by*

*objects in the room; MT, Line B44a) Indiv seems distracted by other objects in the room). On two occasions during the MTPS sessions, individual participants seem to struggle multi-tasking when invited to strum the guitar and sing whilst still being dependent on the communication board and having to read the PCS all at the same time (see Appendix AI table 2: MTPS, Line C50a) Indiv participant struggle to multi-task reading PCS, sing and strum guitar).*

#### 6.4.2 Imitations and associations with PCS and music

Throughout the learning process, the participants in both groups made physical and vocal imitations. In the MTPS sessions there were a lot of participants in both groups making physical imitations of the picture symbols itself (see Appendix AK table 1: MTPS, Line C103a) *Indiv participant imitated PCS by waving movement*). For example, for the picture symbol for the word “me” the picture would consist of a stick figure pointing to itself using its thumb. On many occasions, physical imitations were made where for example a participant will also point to him/herself using his/her thumb when the word “me” is sung during the song (see Appendix AK table 1: MTPS, Line C37a) *Indiv participant imitates PCS by pointing to himself*). Other examples of imitation of picture symbols is where the participants imitated the animals being greeted, for example using one’s arm to imitate that of an elephant’s trunk (see Appendix AK table 2: Line, H136a) *Indiv participant imitate the trunk of an elephant*). There were occasions during the MTPS sessions where vocal imitations of the animals being greeted in the PCS were made. For example, when Mr. Elephant was greeted, the participants made trumpeting vocal sounds thus imitating the trumpeting of an elephant (see Appendix AK table 2: MTPS, Line H58b) *Indiv imitate vocal sound of animal being greeted*). Both groups participated in pretend play by imitating the therapist’s guitar strumming or rocking back, and forth of their upper bodies matching the pulse of the music (see Appendix AK table 1: MTPS, Line E135a) *Participants imitate physical body movement of therapist; MT, Line B80a) Two participants imitate therapist’s movement*). The MT-only sessions had more of these occurrences than the MTPS sessions. As mentioned earlier in the discussion, music can function as a learning medium, especially when multi-sensory modes are being employed, which in this case was the music itself and the movements and imitation the participants made up by the participants themselves during the MT-only sessions. These participants were able to associate with the lyrics, and expressed it through physical movements and imitation. Multi-sensory learning also took place during the MTPS sessions. Both music and

the high iconic images were used as the main learning mediums, and the participants were able to contextualize the lyrics and express it through imitations of the picture symbols itself (as explained by Rouse (2013:227) on page 12 in the literature review). During the first MT-only sessions, both groups' participants made associations of memories or real life event to the lyrics of both songs. For example, the theme of the first song was about animals under the sea. An individual made a personal association with the theme of the song by talking about the beach that was far away, and that one can build castles in the sand (see Appendix AL table 1: MT, Line *B2a*) *Two individuals associated with real life memories*). Then, there were also many associations made that correlated with the intended meaning of the song lyrics during the MT-only sessions through physical movements and vocal sounds. For example: when singing about a fish swimming in the sea, an individual participant imitates the movement of a fish swimming using his/her hands; when singing of a grizzly bear, an individual participant makes growling vocal sounds as shown in the data (see Appendix AL table 1: Line, *G32e*) *Indiv imitate movement and vocal sound of animal*).

#### 6.4.3 Facial expressions and eye-contact

The participants' facial expressions and body language was a learning outcome of the song learning process, as well as the amount of meaningful eye contact they made with the therapist and each other throughout the song learning process. During both MT-only and MTPS sessions, the participant's facial expressions were blunted in affect, specifically during the first two sessions (see Appendix AM table 1: MTPS, Line *A14c*) *Blunted facial expressions*; MT, Line *B8c*) *Participants blunted facial expressions*). The data also indicated that both groups in both sessions' facial expressions shifted to smiles. The MT-only sessions seem to have much more evidence of participant's facial expressions shifting to smiling as well as laughing. The participants giggle and laugh on various occasions during the song learning process in the MT-only sessions (see Appendix AM table 1: MT, Line *D161c*) *Participants smile and laugh*). Both MT-only and MTPS groups presented relaxed, eager and excited body language throughout the song learning process. There were few occasions in which the participants responded in a robotic manner; however the overall body language of both groups and all the sessions seem interested and engaging (see Appendix AM table 2). The MT-only sessions seem to have a larger amount of meaningful eye contact made between the participants and the therapist, or amongst the

participants. Meaningful eye contact was made between the therapist and the participants and the participants self in the MTPS sessions as well, however was less in comparison with the MT-only sessions (see Appendix AM table 2). This may be due to the focused attention on the PCS and communication board the participants were reading as they were singing, thus making eye contact with others difficult to do. The most common symptoms of ASD are impairment or limited ability to convey emotions through facial expression. The overall expression of emotions, whether it is through body language or eye contact, is impaired as well (as stated in the literature review on page 10 (DSM 5, 2013:50-5)). The data results suggest that, through the use of music and PCS in a multi-disciplinary manner, the participants in both groups conveyed some form of self-expression through meaningful eye contact with the therapist and other participants, body language or facial expressions shifting from blunted to smiling expressions of emotions.

## 6.5 Theme 5: Inter-personal engagement

### 6.5.1 Group participation

Throughout the song learning process, the quality of the participants' participation and overall level of emotional engagement seem to play a role in the experience of the song learning process. Overall, both MT-only and MTPS sessions quality of singing, guitar strumming and social engagement were energetic and executed with confidence. However, the data suggests that these occurrences were more common during the MT-only sessions than the MTPS sessions. The guitar strumming of the participants in the MT-only sessions seemed to shift and alternate more often; the participants strummed the guitar with more force and energetically on more occasions than during the MTPS sessions (see Appendix AO table 1). The participant's singing quality was executed with more confidence during the MT-only sessions (see Appendix AO table 1: MT, Line *H27a*) *Participants sing loudly and with confidence*). The overall quality of participation such as singing, strumming of guitar and physical movements (such as hopping in chairs or waving of arms) were executed more energetically during the MT-only sessions. The overall quality of participation varied between energetic to lower energy participation within all the sessions in both MT-only and MTPS sessions (see Appendix AO table 1). This suggests that both groups (MT-only and MTPS) were engaging throughout the song learning process, but on different occasions throughout the song learning process.

### 6.5.2 Musical flexibility

In both the MT-only and MTPS sessions, the participants were musically flexible, i.e. they responded in excitement to unpredictable tempo and dynamic shifts, and were also able to adjust their own singing or playing to the unpredictable changes. However, the analyzed data suggests that during the MT-only sessions the participants were musically flexible on more occasions than the MTPS sessions (see Appendix AO table 2: MTPS, Line *E83a*) *Participants musically adjust tempo and dynamics of singing*; MT, Line *B104b*) *Participants adjust to tempo and dynamic shift with ease*). The participants adjusted to sudden change in tempo and dynamics with ease, and the unpredictable shifts were received as playful and exciting. A person diagnosed with ASD portrays restrictive and repetitive behavioral patterns. The DSM 5 (2013:50-5) clearly explains some of the common symptoms of ASD are insistence of sameness, inflexibility to routine and ritualistic patterns. The participants were able to break away from the routine patterns of the song in terms of tempo and dynamics, and responded in excitement and self-expression through energetic physical movements and expressive quality of singing (see Appendix AO table 2: MTPS, Line *C102c*) *Indiv sing and moves with high energy*; MT, Line *G48a*) *Indiv imitate vocal sound of animal with high energy and playfulness*). Geist *et al.*, (2008:311-313) explain that music therapy techniques allow one to adapt the elements of music such as tempo, rhythm, harmony and melody to promote effective communicative strategies in a therapeutic setting. Music alone can be seen as a useful tool to provide a structure that accentuates the meaning of language in the context of an interactive, enjoyable and motivating stimulus. It is suggested that the music itself provided the structure and patterns that the participants needed in order for them to feel safe and comfortable, to be musically flexible, and to cope with unpredictable dynamic and tempo shifts in the music. The participants were contained by the music itself, but the music also provided the opportunities for them to be self-expressive and to break free from routine, as Geist *et al.*, (2008:311-313) explain.

The overall level of engagement in terms of singing, high energy physical movements and laughter throughout the MT-only sessions seems to occur more than in the MTPS sessions (see Appendix AO table 2: Energy levels). There were acts of spontaneity in both MT-only and MTPS sessions (see Appendix AO table 1: MTPS, Line *A49b*) *Participants spontaneously sing intended*

PCS; MT, Line B24b) *Indiv participant spontaneously sings*). These acts of spontaneity refer to individuals who spontaneously start singing by themselves or spontaneously shouts out answers to questions.

## 6.6 Conclusion

Clients with communication difficulties require alternative and universal means of communicating. For this research study, PCS and MT were employed in combination to provide these alternative manners of communicating for the participants. The PCS comprised visual and non-verbal gesture such as pointing to PCS on a communication board (Gadburry, 2012:151) to facilitate verbal learning. Music therapy techniques comprised aural, kinesthetic and non-verbal techniques to facilitate verbal learning. The data suggests that the two approaches used in combination provide a rich learning experience for participants as indicated in the following table 5.6.1:

Figure 6.6.1

<b>Themes and categories</b>	<b>Differences</b>	<b>Similarities</b>
<b>Theme 1: Recollection</b>		
<b>Recollection of lyrics</b>	Better recollection of lyrics in MT-only sessions than MTPS sessions.	Overall good recollection of lyrics making use of both MT and PCS.
	MT-only sessions forgot the order of animals being greeted in the chorus section where PCS provided visual cues. In contrast to this the order of the animals being greeted were remembered with every rehearsal of the song during MTPS sessions.	Both music and PCS offered non-verbal reminders of the lyrics and different learning methods used to enhance the recollection of lyrics.
	Lyrics were recollected better during the MT sessions due to key words being emphasized by the therapist using various musical techniques.	Both groups were uncertain of the lyrics during the first two sessions in both MT-only and MTPS sessions.

	PCS provided visual cues as a learning tool, and the facilitation of various emphasized musical elements facilitated better sequential recall of the lyrics.	Both PCS and Music Therapy techniques facilitated a better recollection of lyrics making use of own teaching methods in different ways.
	MTPS sessions' lyrics were remembered better by the MT group during the learning of the second song which was taught using only MT techniques.	The current study might suggest that with the PCS providing visual cues in combination of the audible cues music offers, the participants were able to recollect the lyrics in various contexts.
<b>Recollection of melody</b>	The MT-only group seem to recollect the song's melody better than the MTPS group, as there were more occurrences indicated in the data of the better recollection.	The melodies remained the same for both songs, suggesting that it contributed towards the client-therapist relationship, as it provided the participants with something concrete and familiar to work with. The PCS system offered the same familiarity, as the participants make use of the system daily.
<b>Recollection of song form</b>	The song form were remembered very well in the MT-only sessions, whilst the song form in the MTPS sessions were forgotten on various occasions.	Both music and PCS offered non-verbal cues. Used in combination, both provided a kinaesthetic learning experience, as both visual and auditory learning techniques were employed. The use of both techniques provided a multi-sensory learning experience.
<b><u>Theme 2: Music as a learning aid</u></b>		
<b>Cross-modal learning</b>	Fewer physical interpretations of music, (such as swinging of arms and hand gestures) were made in the MTPS sessions than MT-only sessions.	Both MT-only and MTPS sessions had interpretations of the music made through physically moving bodies to match the pulse of the music
	The therapist made more physical interpretations of the music during the MT-only sessions than in the MTPS sessions.	Therapist makes use of non-verbal cues using musical elements in a flexible manner, with visual cues additionally by implementing music therapy techniques in combination of pointing the PCS, thus resulting in a cross-modal learning experience to take place through audible, visual and kinaesthetic aids.

<b>Therapist's musical role</b>	The therapist's dynamics and tempo shifts on more occasions in the MT-only sessions than in the MTPS sessions	
<b>Therapist and participant musical participation</b>	The participant's tempo and dynamics were more flexible, shifted and had a more energetic quality to it during the MT-only sessions than in the MTPS sessions.	
<b>Qualities of pronunciation and vocal participation</b>	Mumbling of lyrics occurred more during the MT-only sessions than the MTPS sessions.	Both MT-only and MTPS sessions have occurrences of lyrics being mumbled by participants.
	The lyrics were pronounced more clearly on more occasions during the MT-only sessions than the MTPS sessions.	Singing qualities vary from monotonic and low energy to playful and energetic, in both MT-only sessions and MTPS sessions.
	The therapist vocally emphasized keywords and pronounced the lyrics much more clearly in the MT-only sessions than the MTPS sessions.	Participants' singing was self-expressive in both MT-only sessions and MTPS sessions.
	More vocal (singing) participation during MT-only sessions than MTPS sessions.	Expressive singing, accompanied with physical movement, occurs during both MT-only and MTPS sessions.
	More occasions of varying singing qualities occur during MT-only sessions than MTPS sessions.	Multi-sensory learning experience, using music flexible in combination with PCS, provides deeper learning and allows self-expression
	More occasions of varying singing qualities occur during MT-only sessions than MTPS sessions.	

**Theme 3: Picture symbols as learning aid**

<b>PCS recognition and iconicity</b>	Participants recognize PCS with ease.	Participants made their own personal meanings and associations with the PCS, which were expressed through physical movements and imitations of the PCS itself as well as through the music, by shifting and adjusting their quality of singing.
	The PCS used for the songs were highly iconic.	PCS served as a non-verbal and visual cue, which provided a multi-sensory learning experience in combination with the non-verbal audible cues the music offered.
	Participants were dependent on the PCS for recollecting the lyrics.	
	The iconicity of the PCS assisted with the recollection of the lyrics.	
	In the MT-only sessions the participants were solely dependent on the memorization of lyrics. In MTPS sessions the participants had PCS as visual learning aids to assist.	
	Participants read PCS by themselves.	
	Individual participants pointed to the correct PCS most of the time.	
	Few occasions occurred in which the incorrect PCS were pointed out at the incorrect time by individual participants.	
<b>Theme 4: Learning outcomes</b>		
<b>Focussed attention</b>	In many occurrences there was focussed attention on the music itself and therapists' guitar playing during the MT-only sessions. The most focussed attention during the MTPS sessions was towards the PCS on communication board.	The PCS served as visual aids, and musical elements such as tempo and dynamics served as audible aids, which both assisted in the learning outcome of recollection of the lyrics in their individual ways

	Participants struggled to multi-task the strumming of the guitar, singing and reading of PCS, whilst fewer occasions of struggling to multi-task singing and strumming the guitar only occurred during the MT-only sessions.	Imitations of therapist physical rocking of upper body and guitar playing occurred during both the MT-only sessions and the MTPS sessions.
<b>Imitations and associations with PCS and music</b>	Vocal imitations of animals in the songs took place spontaneously only during MTPS sessions.	Music and PCS in combination served as a multi-sensory learning experience, as the participants engaged in expression of their own associations of the songs through movement and vocalizations in both the MT-only sessions and the MTPS session.
		Blunted facial expressions were observed on many occasions during both the MT-only sessions and the MTPS sessions.
		Facial expressions shifted to smiling in both MT-only sessions and MTPS sessions.
<b>Facial expressions and eye-contact</b>	Participants laughing with joy only occurred during MT-only sessions.	Relaxed and interested body language was observed during both the MT-only sessions and MTPS sessions.
	More meaningful eye-contact was made with the therapist and others during the MT-only sessions than the MTPS sessions.	Meaningful eye-contact with the therapist and others occurred in both MT-only sessions and MTPS sessions.
	Less eye-contact was made with the therapist and others during the MTPS sessions due to reading PCS on the communication board.	
	The combination of both music and PCS provided a framework in which participants could be self-expressive using eye contact, facial expressions and body language.	
<b>Theme 5: Inter-personal engagement</b>		

<b>Group participation</b>	More occasions where observed in which the quality of the participants guitar strumming shifted to more energetic and vigorous strumming during the MT-only sessions than the MTPS sessions.	The quality of the participants guitar strumming shifted to energetic and vigorous quality of strumming during both MT-only sessions and MTPS sessions.
	Participants sang with more confidence during the MT-only sessions than in the MTPS sessions.	Confident singing qualities were observed during both MT-only sessions and MTPS sessions.
	High energy movements occur on more occasions during the MT-only sessions than in the MTPS sessions.	High energy movements occur on many occasions during both MT-only sessions and MTPS sessions.
		The music itself, as well as PCS, kept the participants socially and inter-personally engaged throughout the song learning process.
		Sudden musical shifts were received as playful and exciting during both the MT-only sessions and the MTPS sessions.
<b>Musical flexibility</b>		Participants were musically able to break away from routines and ritualistic patterns during both MT-only sessions and MTPS sessions.
		The music, as well as the PCS and the communication board, provided structure and a concrete framework which contained the participants very well throughout the song learning process
		Participants responded and behaved spontaneous on numerous occasions during both MT-only sessions and MTPS sessions.
		The therapist provided non-verbal cues by means of body language, guitar accompaniment, modelling, pointing to PCS, and by using musical elements such as dynamics and tempo in a flexible manner

<b>Therapist's interactive role</b>	<p>The therapist made use of non-verbal modelling by means of guitar accompaniment and used her body language to interact with the participants during the MT-only sessions. During the MTPS sessions, the therapist interacted with the participants by means of non-verbal modelling by pointing to the appropriate PCS, whilst making use of the guitar accompaniment additionally.</p>	<p>Verbal interaction and verbal cues were reinforced during both MT-only sessions and MTPS sessions.</p>
	<p>The therapist verbally invited participants to sing on more occasions during the MT-only sessions than the MTPS sessions.</p>	<p>Therapist gives verbal affirmation for the participant's musical offerings in both MT-only sessions and MTPS sessions.</p>
	<p>The therapist verbally invited participants to point the PCS and read the PCS by themselves.</p>	<p>The therapist verbally invited participants to strum the guitar on many occasions during both MT-only sessions and MTPS sessions.</p>
		<p>The therapist verbally invited participants to sing during both MT-only and MTPS sessions on numerous occasions.</p>
		<p>Therapist asked song-related questions during both MT-only sessions and MTPS sessions.</p>

## Chapter 7: Conclusion and limitations

The present study set out to explore the use of PCS and Music Therapy in combination in learning a new song for children diagnosed with ASD. The similarities and differences in the song learning process during the MTPS and MT-only sessions concluded that both therapeutic mediums offered multi-modal learning experience in different and unique ways. The results suggest that both music and PCS served as non-verbal musical and visual cues for the participants to effectively learn a new song. The results were concluded based on the analyzed data, and were thereafter linked to appropriate and available literature.

The conclusion suggests that the combination of PCS and Music Therapy in learning a song offered opportunities for the participants to recall sung lyrics using different learning methods, engage in instrumental play like strumming the guitar, be self-expressive, engage in spontaneous behavior, be musically flexible, and participate in a group activity with their peers. The music itself, as well as the Music Therapy techniques the music therapist employed throughout the sessions, served as non-verbal cues, which were socially engaging, kept the participants focused at the task at hand, and also provided a concrete framework in which the participants could be self-expressive and musically flexible. The PCS served as a non-verbal cue, which provided the participants with comprehensible and familiar tools, in order to recollect the lyrics using visual aids. Both mediums used in combination served as cross-modal learning experience as supported by literature.

The present study found that, overall, the participants had a better recollection of the lyrics during the MT-only sessions than the MTPS sessions. As seen in the data, this might suggest that engagement such as higher occurrences of meaningful-eye contact, physical limitations and own associations made with the content of the songs (which were higher in the MT-only sessions) played a role. The participants did not have the visual cues the PCS provided, thus they had to rely more on the therapist to remind them of the lyrics, and also rely on memorization of the lyrics. During the MTPS sessions the recollection of lyrics were also high; however, the recollection was lower than during the MT-only sessions. In these sessions the participants had very few struggles remembering the chorus section's lyrics where animals are being greeted in a certain order, because they had the visual cues in front of them; on the other hand, in the MT-only sessions they seem to forget the order of the animals being greeted. When music therapy techniques were employed in combination with PCS as visual cues, the participants seem to make less eye-

contact; fewer shifts in their quality singing occurred, and overall group participation was less, as the participants were solely focused on reading the PCS on the communication board.

The therapist also played a role in the conducted study. During the MTPS sessions, the therapist directed attention to the communication board most of the time, which was less engaging with the participants, as she herself was looking and focusing on the communication board and ensuring the participants read the correct PCS at the appropriate time during the songs. During the second and third sessions the participants were more familiar with the lyrics, as in session one and the therapist could invite individual participants to point to the PCS, or strum the guitar, or the group could read the PCS by themselves, thus allowing more opportunity to social engagement.

It is noteworthy that the participants in MTPS sessions forgot the form of the songs. They would often forget to repeat a verse or stop pointing to the appropriate PCS, as they would seem to think the song ended in the middle of the song. In contrast to the MTPS sessions, this never occurred during the MT-only sessions. This might suggest that the music itself provided a well-structured form, which provided a natural flow to the song. The therapist's non-verbal and physical cues (such as facial expressions and body language) provided the participants with sufficient insight to remember the song form. This also might have played a role which resulted in a better recollection of the song form.

Recommendations for future research include i) further exploration of the cross-modal learning potential of the use of melody in song learning in combination with PCS, ii) varying more elements of the song learning process i.e. different melody for different songs, iii) increasing the the number of sessions, iv) conducting similar studies in different contexts.

A limitation of the current study is that the sample for this research study was small and the study was only conducted at only one site. This limits generalizability. It is also important to consider that, due to the nature of ASD, it must be understood that six therapy sessions were not sufficient enough to build a concrete client-therapist relationship with the participants; however, it is important to keep in mind that the focus of the study was to observe the process of learning a new song with different aids assisting this specific client group.

From the findings of the current study, it can be concluded that both Music Therapy and PCS

offered a different learning experience for both groups. When used in combination, whether it was reinforced simultaneously or separate within a session, a multi-sensory learning experience was provided. This offered the participants with the tools to be spontaneous, self-expressive and socially and musically flexible, thus breaking away from the ritualistic and common symptoms of ASD. Both techniques provided the participants with non-verbal and comprehensible cues, which promoted and reinforced the recollection of both the songs thus making them a compatible combination to work with.

## Chapter 8: Sources

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## Chapter 9: Appendices

### Appendix A: Thick description MTPS session activities

Thick description of session number: \_\_\_\_

Group \_\_\_\_ with Music Therapy and PCS

Greeting song:

Drum activity:

Song learning:

Greeting song:

Appendix B: Thick description MT-only session activities

Thick description of session number: \_\_\_\_

Group \_\_\_\_ with Music Therapy

Greeting song:

Drum activity:

Song learning:

Greeting song:

## Appendix C: Session checklist MTPS

Date: \_\_\_\_\_

Group: \_\_\_\_\_

Session number: \_\_\_\_\_

### **Greeting song**

- Learning of the same words and melody
- Greeting each participant individually by singing of names
- Wave movements
- Guitar as accompaniment

### **Drumming activity**

- Improvisation
- Turn Taking game

### **Song learning**

- Use of line drawing communication board
- Teaching of words using pictures
- Use of guitar as accompaniment

### **Greeting song**

- Learning of the same words and melody
- Greeting each participant individually by singing of names
- Wave movements
- Guitar as accompaniment

## Appendix D: Session checklist MT-only

Date: \_\_\_\_\_

Group: \_\_\_\_\_

Session number: \_\_\_\_\_

### **Greeting song**

- Learning of the same words and melody
- Greeting each participant individually by singing of names
- Wave movements
- Guitar as accompaniment

### **Drumming activity**

- Improvisation
- Turn Taking game

### **Song learning**

- Use of guitar as accompaniment
- Repeat words of the song slowly
- Break song up into short phrases, teach it phrase by phrase

### **Greeting song**

- Learning of the same words and melody
- Greeting each participant individually by singing of names
- Wave movements
- Guitar as accompaniment

Appendix E: Information letter (Unica Headmaster)

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Date: .....

Participant information form

Study title: Song learning within Group Music Therapy in combination with Picture Communication Symbols (PCS) for children diagnosed with Autism Spectrum Disorder (ASD)

Dear acting principle at Unica School

As partial fulfilment of the Masters degree in music therapy degree at the University of Pretoria, I propose to conduct a study on exploring the process of song learning using Picture Communication Symbols (referred to as PCS) as an aid in music therapy for children diagnosed with Autism Spectrum Disorder. It would be meaningful to conduct the study at Unica School for Autism as the school and students are familiar with the PCS system and meet the criteria for the study's chosen client group.

The criteria for the participants participating in the study are the following: participants will be higher functioning students diagnosed with Autism Spectrum Disorder. The participants will be selected based on their level of functioning and verbal abilities. The participants must be able to vocalize sound or be able to use spoken language as well as understand the line drawings method. They must also be able to understand English.

I plan to conduct six weekly sessions within the time frame of two weeks with two groups consisting of participants who have met the above mentioned criteria. The sessions will take place during times that will be discussed with you and all involved so not to have a negative or inconvenient impact on other school activities or academic classes. Each session will be more or less 20 minutes long. The participants will be divided into two groups. The first three sessions will consist of the one group learning a song using music therapy techniques only whilst, in the control group, PCS will be employed in addition to the music therapy techniques. In sessions four to six the groups will learn a new song similar to the previous song only this time the groups will swap. This ensures that both groups are taught an unfamiliar song using music therapy techniques as well as with the aid of PCS techniques.

The sessions will be video-recorded. This is a standard practice in music therapy as analysis of these recordings inform the manner in which the next sessions will be conducted. These sessions will be analysed as part of the analyses process of the research study.

All information collected will be treated as confidential and none of the participant's identity will be used in the transcript of the data or within the dissertation. Participation is voluntary and the learners are free to withdraw at any stage during the process. Should any student withdraw during the process, all data regarding him/her will be destroyed.

All data collected will be stored at the University of Pretoria for 15 years. After completion, the dissertations will be made available through the University of Pretoria Library.

Please do not hesitate to contact me should you have any questions or concerns. I greatly appreciate being granted the opportunity to conduct this study at your school. If you consent to your school's participation, the necessary information and consent forms will be passed onto the participants' parents/guardians.

Thank you.

Hermi Viljoen

Researcher / Registered music therapy student

[herb\\_viljoen@hotmail.com](mailto:herb_viljoen@hotmail.com)

Appendix F: Information letter (School Governing Body)

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Date: .....

Participant information

Study title: Song learning within Group Music Therapy in combination with Picture Communication Symbols (PCS) for children diagnosed with Autism Spectrum Disorder (ASD)

To whom it may concern

As partial fulfilment of the Masters degree in music therapy degree at the University of Pretoria, I propose to conduct a study on exploring the process of song learning using Picture Communication Symbols (referred to as PCS) as an aid in music therapy for children diagnosed with Autism Spectrum Disorder. It would be meaningful to conduct the study at Unica School for Autism as the school and students are familiar with the PCS system and meet the criteria for the study's chosen client group.

The criteria for the participants participating in the study are the following: participants will be higher functioning students diagnosed with Autism Spectrum Disorder. The participants will be selected based on their level of functioning and verbal abilities. The participants must be able to vocalize sound or be able to use spoken language as well as understand the line drawings method. They must also be able to understand English.

I plan to conduct one weekly session within the time frame of three weeks with two groups consisting of participants who have met the above mentioned criteria. The sessions will take place during times that will be discussed with the school and all others involved so not to have a negative or inconvenient impact on other school activities or academic classes. Each session will be more or less 20 minutes long. The participants will be divided into two groups. The first three sessions will consist of the one group learning a song using music therapy techniques only whilst, in the control group, PCS will be employed in addition to the music therapy techniques. In sessions four to six the groups will learn a new song similar to the previous song only this time the groups will swap. This ensures that both groups are taught an unfamiliar song using music therapy techniques as well as with the aid of PCS techniques.

The sessions will be video-recorded. This is a standard practice in music therapy as analysis of these recordings inform the manner in which the next sessions will be conducted. These sessions will be analysed as part of the analysis process of the research study.

All information collected will be treated as confidential and none of the participant's identity will be used in the transcript of the data or within the dissertation. Participation is voluntary and the learners are free to withdraw at any stage during the process. Should any student withdraw during the process, all data regarding him/her will be destroyed.

All data collected will be stored at the University of Pretoria for 15 years. After completion, the dissertations will be made available through the University of Pretoria Library.

Please do not hesitate to contact me should you have any questions or concerns. If you consent to the schools participation, the necessary information and consent forms will be passed onto the participants parents/guardians as well as the headmaster of Unica.

Thank you.

Hermi Viljoen

Researcher / Registered music therapy student

[herb\\_viljoen@hotmail.com](mailto:herb_viljoen@hotmail.com)

Appendix G: Information letter (Parents/Guardians)

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Date: .....

Participant information

Study title: Song learning within Group Music Therapy in combination with Picture Communication Symbols (PCS) for children diagnosed with Autism Spectrum Disorder (ASD)

Dear Parent/Guardian

As partial fulfilment of the Masters degree in music therapy degree at the University of Pretoria, I propose to conduct a study on exploring the process of song learning using Picture Communication Symbols (referred to as PCS) as an aid in music therapy for children diagnosed with Autism Spectrum Disorder. It would be meaningful to conduct the study at UNICA School for Autism as the school and students are familiar with the PCS system and meet the criteria for the study's chosen client group.

The criteria for the participants participating in the study are the following: participants will be higher functioning students diagnosed with Autism Spectrum Disorder. The participants will be selected based on their level of functioning and verbal abilities. The participants must be able to vocalize sound or be able to use spoken language as well as understand the line drawings method. They must also be able to understand English.

I plan to conduct one weekly session within the time frame of three weeks with two groups consisting of participants who have met the above mentioned criteria. The sessions will take place during times that will be discussed with you and all involved so not to have a negative or inconvenient impact on other school activities or academic classes. Each session will be more or less 20 minutes long. The participants will be divided into two groups. The first three sessions will consist of the one group learning a song using music therapy techniques only whilst, in the control group, PCS will be employed in addition to the music therapy techniques. In sessions four to six the groups will learn a new song similar to the previous song only this time the groups will swap. This ensures that both groups are taught an unfamiliar song using music therapy techniques as well as with the aid of PCS techniques.

The sessions will be video-recorded. This is a standard practice in music therapy as analysis of these recordings inform the manner in which the next sessions will be conducted. These sessions will be analysed as part of the analyses process of the research study.

All information collected will be treated as confidential and none of the participant's identity will be used in the transcript of the data or within the dissertation. Participation is voluntary and the learners are free to withdraw at any stage during the process. Should any student withdraw during the process, all data regarding him/her will be destroyed.

All data collected will be stored at the University of Pretoria for 15 years. After completion, the dissertations will be made available through the University of Pretoria Library.

Please do not hesitate to contact me should you have any questions or concerns. I greatly appreciate being granted the opportunity to conduct this study with your child. If you consent to your child's participation, please complete the attached consent form.

Thank you.

Hermi Viljoen

Researcher / Registered music therapy student

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Appendix H: Consent form (Unica School for Autism)

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Date: .....

MUSIC THERAPY SESSION: PERMISSION FOR ATTENDANCE AND TO RECORD

I \_\_\_\_\_, headmaster of Unica School for Autism, hereby grant permission for \_\_\_\_\_ to take part in a research study conducted at Unica School for Autism from \_\_\_\_\_ to \_\_\_\_\_ 2016. I also grant permissions for the total of three sessions to be recorded onto video. I understand that these recordings will be used for research and educational purposes as part of the music therapy student's research study. I understand that the visual and audio recordings of the sessions are standard music therapy and research practice enabling detailed analysis of the sessions in order to gain data for the ongoing research study. Privacy and confidentiality are assured, in line with professional ethical practice. At the end of the research study the video material will become the property of the Music Department, University of Pretoria. The material will not be distributed nor sold.

Name and signature: Please also state relationship  
to client: (relative, guardian, care-worker, etc) \_\_\_\_\_  
Placement/Institution representative: \_\_\_\_\_  
MMus (MT) Student and student number: \_\_\_\_\_  
MMus (MT) Student signature: \_\_\_\_\_  
Music therapy Student supervisor: \_\_\_\_\_

Appendix I: Consent form (Parents/Guardians)

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FAX (012) 420-4351  
[www.up.ac.za/academic/music/music.html](http://www.up.ac.za/academic/music/music.html)

Date: .....

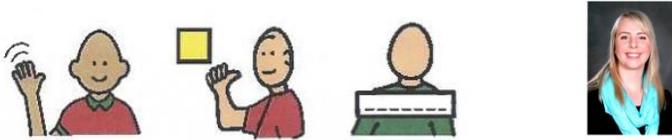
MUSIC THERAPY SESSION: PERMISSION FOR ATTENDANCE AND TO RECORD

I \_\_\_\_\_, parent/guardian of \_\_\_\_\_ grant permission for \_\_\_\_\_ to take part in a research study conducted at Unica School for Autism from \_\_\_\_\_ to \_\_\_\_\_ 2016. I also grant permissions for the total of three sessions to be recorded onto video. I understand that these recordings will be used for research and educational purposes as part of the music therapy student's research study. I understand that the visual and audio recordings of the sessions are standard music therapy and research practice enabling detailed analysis of the sessions in order to gain data for the ongoing research study. Privacy and confidentiality are assured, in line with professional ethical practice. At the end of the research study the video material will become the property of the Music Department, University of Pretoria. The material will not be distributed nor sold.

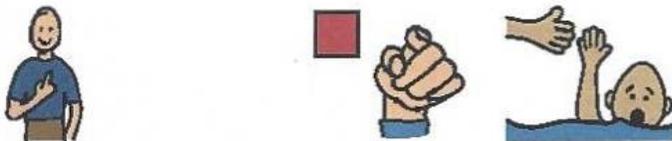
Name and signature: Please also state relationship  
to client: (relative, guardian, care-worker, etc) \_\_\_\_\_  
Placement/Institution representative: \_\_\_\_\_  
MMus (MT) Student and student number: \_\_\_\_\_  
MMus (MT) Student signature: \_\_\_\_\_  
Music therapy Student supervisor: \_\_\_\_\_

Appendix J: Assent letter (Participant)

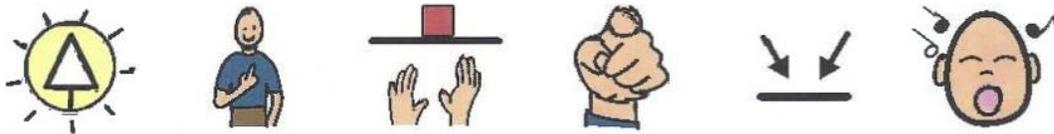
**CHILD ASSENT LETTER**



Hello, my name is Hermi.



I need your help.



Today I want you to sing



and play with me.



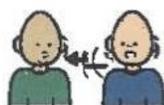
If you do not want to play or



sing



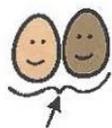
please



tell



me.



We



are going



to



have lots of fun.



I am



going



to



make a



video



of you



playing



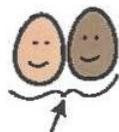
and



singing.



First



we



will

sing



our



hello



song.



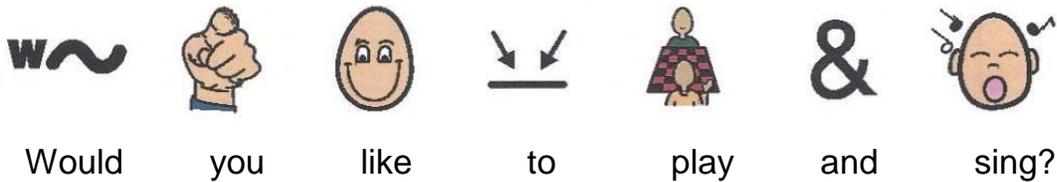
Then we will play on the drums.



Then we will learn a new song.



And then we will sing a goodbye song.



Would you like to play and sing?



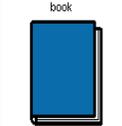
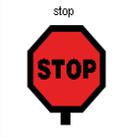
Now let us complete the form.

Appendix K: Assent form (Participant)  
**CHILD ASSENT FORM**

Date: \_\_\_\_\_

Name of child: \_\_\_\_\_ Age: \_\_\_\_\_

Make a tick next to the one that you choose:

	Did somebody tell to you what you will do today?		
	Yes	Unsure	No
	Do you understand that you may choose to help me?		
	Yes	Unsure	No
	Do you understand that you may stop when you want to?		
	Yes	Unsure	No
	Will you allow me to video record you?		
	Yes	Unsure	No
Do you have _____? 	Do you have any questions to ask me?		
	Yes	Unsure	No
	Do you understand what I explained to you?		
	Yes	Unsure	No
	Would you like to help me today?		
	Yes	Unsure	No

Appendix L: Permission letter (UNICA School for Autism)



UNICA SCHOOL FOR CHILDREN WITH AUTISM

P.O. BOX 35182, MENLO PARK, 0102  
TEL: 012 460 6539 / 012 346 1103  
FAX: 012 460 6324  
HOSTEL: 012 329 0647

REG NO: CDE 211179 TS 04  
ACTING PRINCIPAL: Mrs A J. PERUMAL

Email: admin@unicaschool.co.za

11 April 2016

**RESEARCH AT UNICA SCHOOL**

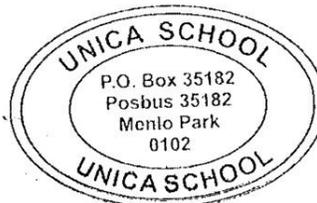
**Topic: Song learning within Group Music Therapy in combination with Picture Communication Symbols (PCS) for children diagnosed with Autism Spectrum Disorder (ASD).**

We herewith give permission to Hermi Viljoen to conduct the proposed research at our school.

Thank you for your interest in our school. We kindly request that a bound copy of the research project as well as any articles be made available to Unica school upon completion.

Sincerely,

Mrs AJ Perumal



## Appendix M: Permissions letter (Ethics Committee UP)



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

Faculty of Humanities  
Research Ethics Committee

12 April 2016

Dear Prof Johnson

**Project:** Song learning with group music therapy in combination with Picture Communication Symbols (PCS) for children diagnosed with Autism Spectrum Disorder (ASD)  
**Researcher:** H Viljoen  
**Supervisor:** Ms C Lotter  
**Department:** Music  
**Reference number:** 10240323 (GW20160201HS)

Thank you for the response to the Committee's correspondence 7 March 2016.

I have pleasure in informing you that the Research Ethics Committee formally **approved** the above study at an *ad hoc* meeting held on 12 April 2016. Data collection may therefore commence.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should your actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

The Committee requests you to convey this approval to the researcher.

We wish you success with the project.

Sincerely

**Prof. Maxi Schoeman**  
Deputy Dean: Postgraduate Studies and Ethics  
Faculty of Humanities  
UNIVERSITY OF PRETORIA  
e-mail: tracey.andrew@up.ac.za

Kindly note that your original signed approval certificate will be sent to your supervisor via the Head of Department. Please liaise with your supervisor.

Research Ethics Committee Members: Prof MME Schoeman (Deputy Dean); Prof KL Harris; Dr L Blokland; Dr R Fassell; Ms KT Govinder; Dr E Johnson; Dr C Panebianco; Dr C Puttergill; Dr D Reyburn; Prof GM Spies; Prof E Taljard; Ms B Tsebe; Dr E van der Klashorst; Mr V Sithole



2. The Researcher will make every effort to obtain the goodwill and co-operation of the GDE District officials, principals, SGBs, teachers, parents and learners involved. Participation is voluntary and additional remuneration will not be paid;
3. Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal and/or Director must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.
4. Research may only commence from the second week of February and must be concluded by the end of the THIRD quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.
5. Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.
6. It is the researcher's responsibility to obtain written consent from the SGB/s; principal/s, educator/s, parents and learners, as applicable, before commencing with research.
7. The researcher is responsible for supplying and utilizing his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institution/s, staff and/or the office/s visited for supplying such resources.
8. The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research title, report or summary.
9. On completion of the study the researcher must supply the Director: Education Research and Knowledge Management, with electronic copies of the Research Report, Thesis, Dissertation as well as a Research Summary (on the GDE Summary template). Failure to submit your Research Report, Thesis, Dissertation and Research Summary on completion of your studies / project – a month after graduation or project completion - may result in permission being withheld from you and your Supervisor in future.
10. The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned;
11. Should the researcher have been involved with research at a school and/or a district/head office level, the Director/s and school/s concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards



.....  
**Dr David Makhado**

**Director: Education Research and Knowledge Management**

DATE: 2016/03/18  
.....

## Appendix O: Thick descriptions A

A	Under the water	
18-Apr-16	Session 1 with PCS Group A	
Time (minutes into session)	Transcribed sessions	Coding
9:20		
Line 1	I show the board with the picture symbols to the participants	
Line 2	Tshepo and Jack lean forward in their seats to look closer at the symbols to see the PCS better, they seem very focused on the board	A2a) Participants interested in PCS A2b) Participants focused on PCS
Line 3	The first symbol I point to is the symbol of the word "under"	A3a) Therapist direct attention to PCS
Line 4	I ask the participants what word the picture symbol represents	A4a) Therapist ask participants question about PCS
Line 5	Tshepo is first to answer that the symbol means "down". The overall energy of the participants are very low but they seem focused on the board as they attentively watch my finger point to the PCS	A5a) Participant identifies PCS to a word A5b) Participant associate PCS with own meaning A5c) Participants participate with low energy A5d) Participants focused on PCS
Line 6	Other members agree with him	A6a) group agrees with associated PCS meaning
Line 7	I explain to him that the symbol means "under" in the song	A7a) Therapist explain word represented by PCS

Line 8	I point to the next symbol representing the word "water"	A8a) Therapist direct attention to PCS
Line 9	The participants find this symbol much easier	A9a) Participants recognize PCS with ease A9b) Iconicity of word seems higher
Line 10	All participants say together that the symbol means "water"	A10a) group agrees with intended PCS meaning
9:34		
Line 11	I start to sing the first two lines of the song while pointing to the symbols that match the words	A11a) Therapist verbally model melody and rhythm of first verse section A11b) Therapist direct attention to PCS
Line 12	After I sing it to them I invite them to sing with me the same two lines I had just modeled for them	A12a) Therapist invite participants to sing A12b) Repetition of verse
Line 13	Tshepo, Jack and Ellen lean forward from their seats and sing softly and slowly with me with very low energy	A13a) Participants interested in PCS A13c) Participants sing softly and slowly with therapist A13d) Participants engage with low energy
Line 14	They closely watch my finger as I point to the symbols with blunted facial expressions	A14a) Therapist direct attention to PCS A14b) Participants focused on PCS A14c) Blunted facial expressions
Line 15	After we sing the first two lines together I continue with the next line, which consists of the first symbol being "under" as in the first very first line while I point to the matching picture symbols. The participants remember the words "water" from the first two line with ease	A15a) Therapist introduce/model melody and rhythm of second verse section A15b) Therapist direct attention to PCS A15c) Repetition of verse A15d) Iconicity of word seems higher
Line 16	The participants automatically start singing the words very softly and recognize the last symbol "sea"	A16a) Participants sing softly A16b) Participants remember PCS with ease A16c) Iconicity of words seems higher
Line 17	I praise them for their effort	A17a) Therapist verbally give praise

9:47		
Line 18	I invite the group members to sing the song from the beginning with me	A18a) Therapist invite participants to sing A18b) Repetition of verse
Line 19	We sing it together; Tshepo, Jack and Ellen is still leaning forward in their chairs to look at the communication board closely	A19a) Participants sing with therapist A19b) Participants interested in PCS
Line 20	They follow my finger as I point to the symbols	A20a) Therapist direct attention to PCS A20b) Participants focused on PCS
Line 21	They sing softly and slowly and with very low energy	A21a) Participants sing softly and slowly A21b) Low energy
Line 22	It almost sounds like they are mumbling the words more than they are singing it	A22a) Mumbling of words
9:56		
Line 23	After I praise them for singing the correct words, I continue to with the song	A23a) Therapist verbally give praise A23b) Repetition of verse
Line 24	There were no symbols available for the words "lots and lots" so I sing it very slowly and clearly to which the participants mumble the words with me	A24a) Therapist sing words without PCS represented A24b) Therapist sing slowly and clearly A24c) Mumbling of words
Line 25	As soon as I get to the word "fish" I point to the symbol on the board again	A25a) Therapist direct attention to PCS
Line 26	The participants say the word "fish" with me when I point to the symbol, they seem to recognize the picture symbol with ease	A26a) Participants recognize pc with ease A26c) Iconicity of word seems high

Line 27	The participants softly sing/say the words with me as I continue with the song, some of them mumble the words along	A27a) Participants sing softly and slowly A27b) Participants speak words with monotonic voice tone A27c) Mumbling of words
Line 28	They recognize and say the words "swimming" and "me" as I point to it with blunted facial expressions	A28a) Participants recognize pc with ease A28b) Participants speak words with monotonic voice tone A28c) Therapist point to PCS A28d) Blunted facial expressions A28e) Iconicity of word seems high
Line 29	Tshepo, Jack and Ellen are still leaning forward to closely look at the board	A29a) Participants interested in PCS
Line 30	They only look at my finger and the symbols I am pointing at	A30a) Therapist direct attention to PCS A30b) Participants focused on PCS
Line 31	I repeat the line slowly and very clearly point to the symbols	A31a) Therapist sing softly A31b) Therapist direct attention to PCS A31c) Repetition of verse
Line 32	The participants sing the song very softly and with low energy and blunted facial expressions while I sing and point to each symbol	A32a) Participants sing softly with therapist A32b) Therapist point to PCS A32c) Blunted facial expressions
Line 33	Again they look very closely at the symbols on the communication board as I point to it	A33a) Participants focused on PCS A33b) Therapist direct attention to PCS
Line 34	I praise them for their efforts	A34a) Therapist verbally give praise
10:12		
Line 35	I invite the participants so sing the lines of the song we had learned so far from the beginning	A35a) Therapist verbally invite participants to sing A36b) Repetition of verse
Line 36	The participants follow my finger as I point to the symbols we are singing	A36a) Participants focused on PCS A36b) Participants and therapist sing together

Line 37	They sing softly and with very low energy and at the last line when we sing "lots and lots" some of the participants stop singing	A37a) Participants sing softly A37b) Participants forget words without PCS representing A37c) Participants sing with low energy
Line 38	They do however sing again as soon as I point to the symbols on the communication board again	A38a) Participants remember PCS
Line 39	We sing the song from the beginning for a second time. The participants sing along with blunted facial expressions	A39a) Participants and therapist sing together A39b) Repetition of verse A39c) Blunted facial expressions
Line 40	Jack leans back into his chair	A40a) Indiv relaxed body language
Line 41	Near the end of the last line of the song, Jack makes hand movements representing that of a fish swimming (symbol of "fish") and points at himself when we sing "me"	A41a) Indiv participant imitates PCS by pointing to himself and imitate swimming fish
Line 42	The participant's continuously look at my finger and the symbols I am pointing at throughout the verse section	A42a) Participants focused on PCS A42b) Therapist direct attention to PCS
10:49		
Line 43	I explain to them that the song is not finished	
Line 44	I point to the symbol on the communication board that represents "hello"	A44a) Therapist direct attention to PCS
Line 45	I then take out a symbol of an octopus that I stuck to a magnet	A45a) Therapist add PCS to board

Line 46	As I place the octopus symbol on the board, I ask the participants what sea animal the symbol represents	A46a) Therapist direct attention to PCS A46b) Therapist ask participants question about PCS
Line 47	Ellen answers spontaneously "octopus", to which the rest of the group repeat the word " octopus" with me	A47a) Individ recognize PCS with ease A27b) Individ spontaneously says intended PCS A47c) Group agrees with intended meaning
Line 48	I continue by sticking the next symbol of the next sea animal while singing the song. The group softly mumble the words with me, they are unsure of the words	A48a) Therapist add PCS to board A48b) Mumbling of words A48c) Group says the words softly A48d) Participants unsure about the words
Line 49	The participants say loudly at the same time "shark" as soon as they see the symbol	A49a) Participants recognize PCS with ease A49b) Participants spontaneously sing intended PCS
Line 50	I continue by sticking the next symbol which is the symbol of a jellyfish	A50a) Therapist add PCS to board
Line 51	The participants say loudly together "jellyfish" as one of the participants, Ellen, leans forward again to observe the board more closely	A51a) Participants recognize PCS with ease A52b) Individ interested in PCS A52c) Participants spontaneously shout intended PCS
Line 52	I stick the last symbol, which is that of a crab	A52a) Therapist add PCS to board
Line 53	The participants say loudly and simultaneously "crab"	A53a) Participants recognize PCS with ease A53b) Participants spontaneously shout intended PCS
11:21		
Line 54	I invite the participants to sing the section where we greet the sea animal with me	A54a) Therapist invite participants to sing A54b) Repetition of chorus
Line 55	As we sing I point to every sea animal symbol, as well as back to the "hello"	A55a) Therapist direct attention to PCS A55b) Participants recognize PCS with ease A55c) Iconicity of words seem high

	symbol, which they remember to sing very well. The entire chorus sections picture symbols seems to be high in iconicity	
Line 56	The participants sing along as well as they can, as they seem unsure of the melody still	A56a) Participants sing with therapist A56b) Participants unsure of melody
Line 57	The participants still sing rather softly but much louder than they sang while we were learning the verse of the song and still with blunted facial expressions on their faces	A57a) Participants sing moderately loud A57b) Participants sing with more confidence A57c) Blunted facial expressions
11:45		
Line 58	I invite the participants to sing the song with me from the very beginning	A58a) Therapist invite participants to sing A58b) Repetition of verse
Line 59	I count them in by counting to four as the song is in 4/4 meter time	
Line 60	The members sing along softly but still seem unsure at certain words of the song except for when we sing the words there are symbols for on the communication board which seem iconic	A60a) Participants remember PCS with ease A60b) Participants forget words with PCS absent A60c) Participants sing softly A60d) Iconicity of words seem high
Line 61	All members look intensively at the symbols as my finger points to the symbols as we sing	A61a) Participants focused on PCS A61b) Therapist direct attention to PCS

Line 62	We sing the verse twice and move to the chorus section where we greet the different sea animals. The participants attentively watch my finger as I point to the picture symbols and say the words with me in a monotonic quality of voice and with blunted facial expressions	A62a) Repetition of chorus A62b) Participants sing with monotonic tone quality A62c) Participants unsure of melody A62d) Participants focused on PCS A62e) blunted facial expressions
Line 63	When we get to the crab symbol, Tshepo stands up for a short second and throws his hands in the air as he sits down again	A63a) Indiv participant jumps up in excitement A63b) Indiv body language indicate excitement and eagerness to participate
Line 64	He sings very loudly "Mr. Crab"	A64a) Participant sings loudly and spontaneously A64b) Indiv recognize PCS with ease
Line 65	As we return to the verse section again, the members seem to be unsure about certain parts of the song as well as the melody	A65a) Participants unsure of melody A65b) Unsure of melody A65c) Repetition of verse
Line 66	Three of the four participants lean forward in their seats to look at my finger pointing to the symbols more closely	A66a) Participants focused on PCS
Line 67	We repeat the chorus section as in the beginning	A67a) Repetition of chorus
Line 68	The participants are still unsure about the melody of the song and murmur the words overall with low energy, monotonic singing and blunted facial expressions	A68a) Participants unsure of melody A68b) mumbling of words A68c) Blunted facial expressions A68d) Participants engage with low energy A68e) Participants sing with monotonic tone quality
13:35		
Line 69	I place the communication board next to me on another chair	

Line 70	I pick up my guitar and count to four. I play moderately slow	A70a) Therapist adds guitar accompaniment A70b) Therapist plays moderately slow
Line 71	I strum on the first main pulse of each line in the verse	A71a) Therapist strum chords on main pulse slowly
Line 72	I occasionally point to the symbols as much as I possibly can	A72a) Therapist occasionally direct attention to PCS
Line 73	The participants sing the melody more clearly	A73a) Participants sing with therapist A73b) Participants remember melody A73c) Clearer pronunciation of words
Line 74	We sing the verse section twice	A734a) Repetition of verse
Line 75	The participants sing softly and with low energy but more melodic	A75a) Participants sing softly A75b) Participants remember melody
Line 76	They mostly look at the communication board and my finger pointing to the symbols with blunted facial expressions	A76a) Participants focused on PCS
Line 77	We continue to the chorus section where we greet the different sea animals	A77a) Repetition of chorus
Line 78	Similar to how I strummed the guitar and still managed to point to the symbols, I strum the chord on the guitar on the first main pulse of the chorus and continue to point to the symbols as we sing it	A78a) Therapist strum main pulse slowly A77b) Therapist direct attention to PCS
Line 79	The participants sing louder and more melodic than they had sung in the verse section. They also seem recognize the picture symbols easier and quicker for the chorus section as almost all of the picture symbols seem iconic	A79a) Participants sing louder A79b) Participants sing melodically A79c) Participants recognize PCS with ease A79d) Iconicity of words seem higher

Line 80	Ellen leans forward when we greet Mr. Jellyfish to see properly which symbol I am pointing to	A80a) Indiv focus on PCS A80b) Indiv interested in PCS
Line 81	I say loudly that we are going to sing the verse section again and start immediately	A81a) Therapist verbally explain form of song A81b) Repetition of verse
Line 82	This time I do not point to the symbols every time	A82a) Therapist occasionally direct attention to PCS
Line 83	I strum the guitar more often and occasionally point to symbols such as "swimming" and "me"	A83a) Therapist strum guitar fuller A83b) Therapist occasionally direct attention to PCS
Line 84	The participants looked at my hand and me as I strummed the guitar	A84a) Participants focus on PCS A84b) Participants focus on guitar
Line 85	They sing the lyrics and melody more clearly but with blunted facial expressions	A85a) Participants recognize PCS with ease A85b) Participants sing melodic A85c) Blunted facial expressions
Line 86	As soon as I pointed to the symbols, all participants immediately followed my hand and read the symbols	A86a) Participants dependent on PCS to remember words
Line 87	Jack tapped the chair next to his with his hand on the very last pulse of the song as we finished singing it (specifically on the word "me")	A87a) Indiv taps to the pulse of the music
Line 88	I praise them for their efforts	A88a) Therapist verbally affirm
Session notes	Song learning using the communication board felt easy	
	The participants read the lyrics and remembered the melody well	
	They were not familiar with the symbol for the word "under"	
	It might not have been an iconic symbol for them	

	Overall it seems that the participants learned the song with ease
	I struggled to play guitar and point to the symbols which made it very difficult
	Might be easier with an assistant or someone who can point to the symbols or play guitar
	Perhaps one of the participants can assist by pointing to the symbols in the next session

Appendix P: Thick descriptions B

B	Under the water	
18-Apr-16	Session 1 without pcs Group B	
Time (minutes into session)	Thick description	Code
11:07		
Line 1	I explain that we are going to sing a song about the sea	
Line 2	Lisa and Tom comment about the sea by saying it is very far and that one can build sandcastles in the sand when they go to the sea	B2a) Two individuals associated with real life memories
Line 3	I softly strum the guitar	B3a) Therapist strums guitar softly
Line 4	The tempo is moderately slow	B4a) Therapist strums guitar slowly
Line 5	The main pulse (on count beat 1 and 3) is emphasized	B5a) Therapist put emphasis on beat one and three
Line 6	The attentively participants look at my fingers as I start to play	B6a) Participants focus on therapist
Line 7	When I start to sing the first line of the song, the participants look at my cheerful and inviting facial expression	B7a) Participants make eye contact with therapist B7b) Therapist facial expression is cheerful and inviting
Line 8	After I finish singing the first line I verbally invite the participants to sing the first line with me. I sing slowly and pronounce the lyrics very clearly. The participants start at me with blunted facial expressions and the overall energy in the room is low	B8a) Therapist invite participants to sing B8b) Repetition of verse line B8c) Participants blunted facial expressions B8d) Participants engage with low energy
Line 9	All the participants are sitting up straight with their hands on their laps, interested in what I am going to do next except for Tom who is slouching back into his chair while picking his nose calmly and relaxed	B9a) Indiv participant sits in relaxed slouched position B9b) Participants focus on therapist B9c) Indiv participant relaxed and comfortable body language

Line 10	I count to 4 and start to sing the first line	B10a) Repetition of verse
Line 11	I rock my upper body from the one side to the other to the tempo of the song	B11a) Therapist rocks upper body to pulse of the music
Line 12	I sing the first line of the song slowly and calmly however none of the participants sang with me as they are attentively staring at me with blunted facial expressions	B12a) Therapist sings calmly and slowly B12b) Participants focus on therapist B12c) Blunted facial expressions
Line 13	I ask Tom to stop picking his nose	
Line 14	He giggles and sits up straight	
Line 15	The rest of the group giggles with him	B15a) Indiv giggles
Line 16	I continue strumming the guitar softly and gentle	B16a) Therapist strums guitar softly and gentle
Line 17	I verbally invite the group to sing along with me	B17a) Therapist invite participants to sing
Line 18	This time the all participants sang the words very softly but seem unsure of the melody	B18a) Participants sing with therapist softly B18b) Participants unsure of verse melody
Line 19	Some mumbled the words more than singing it. The overall energy in the space is very low	B19a) Mumbling of words B19b) Low energy participation and singing
Line 20	I invite them to sing it one more time	B20a) Therapist invite participants to sing B20b) Repetition of verse
Line 21	This time the participants all sing along but still very softly but also more melodic. I take turns making eye contact with each participant. They are still unsure of the lyrics so they mumble the lyrics	B21a) Participants sing softly B21b) Participants sing more melodically B21c) Therapist makes eye contact with participants B21d) Mumbling of words
Line 22	Lisa lifts her arms and pretends to be cutting something using her middle and index fingers	B22A) Indiv participant make unrelated hand movement suggesting cutting with scissors
Line 23	She repeatedly says the word "scissors"	B23a) Indiv make own association with unrelated hand gesture
Line 24	Christopher lifts his arms and copies her movements however he mumbles the words of the first line along with the rest of the group	B24a) Indiv Participant physically imitating other Indiv movement B21b) Indiv participant spontaneously sings B21c) Indiv mumbles words
11:59		

Line 25	I continue with the second line of the song	B25a) Therapist verbally introduce second line of verse
Line 26	I emphasize words such as "fish", "swimming" and "me"	B26a) Therapist emphasize key words
Line 27	As I sing the second line again some participants try to sing the words with me by mumbling the words I had emphasized with blunted facial expressions	B27a) Repetition of verse B27b) Mumbling of emphasized words B27c) Blunted facial expressions
Line 28	Christopher makes hand movements that are similar to that of a fish swimming using his right hand and arm	B28a) Individ Associate intended lyrics with movement of an animal
Line 29	I verbally invite the participants to sing the line with me again	B29a) Therapist invite participants to sing
Line 30	Two of the participants mumble the line with me but the rest of the participants remain quiet	B30a) Two participants mumble words softly B30b) Participants low participation levels
Line 31	It is mostly Tom and Christopher who seem to sing with me with enthusiasm	B31a) Two participants sing with therapist with enthusiasm
Line 32	The quality of singing/mumbling of words of the participants is very soft and they seem shy or unsure about the words and the melody. I try to lift the overall energy and level of participation by smiling and being as inviting as possible to the participants but they stare at me and around the room with blunted facial expressions	B32a) Participants sing/mumble words softly B32b) Participants unsure of chorus words B32c) Unsure of chorus melody B32d) Therapist smiles B32e) Therapist body language is inviting B32e) Blunted facial expressions
12:13		
Line 33	I directly move to the beginning of the song and start singing the first line cheerful and lively	B33a) Therapist attempts to shift energy of the music B32b) Therapist sings cheerful and lively B33c) Repetition of verse
Line 34	Very few of the participants sing with me, it is unclear to see who exactly is participating	B34a) Few participants sing with therapist

Line 35	Those who are singing only sing key words such as "under", "water", "sea", and "me"	B35a) Participants unsure of verse words B35b) Emphasized words pronounced clearest B35c) Participants remember emphasized words in verse most
Line 36	We repeat the first two lines of the song of which the overall energy of the participants are very low. They stare at me with blunted facial expressions on their faces	B36a) Repetition of two verse lines B36b) Blunted facial expressions B36c) Low energy participation and singing
12:24		
Line 37	I verbally invite some members individually to sing with me such as Ben, Christopher	B37a) Therapist verbally invite Individ participants to sing
Line 38	I count to 4 enthusiastically to prepare them for when we will start singing the song again	B38a) Therapist count participants in with enthusiasm B38b) Repetition of verse
Line 39	I fasten the tempo of my guitar playing	B39a) Therapist increase tempo of guitar strumming
Line 40	Adjust the dynamics of my strumming and singing to a more lively quality but still very calm. I pronounce the words clearly	B40a) Therapist increase dynamics of singing and guitar strumming B40b) Therapist plays and sings lively B40c) Therapist pronounce words clearly
Line 41	My strumming and singing overall are a bit louder than before	B41a) Therapist sings and strums louder
Line 42	This time all participants sang along	
Line 43	They sing with a very low energy, monotonic singing, mumble the emphasized words and stare at me with blunted facial expressions	B43a) Monotonic singing B43b) Participants quality of voice has low energy B43c) mumbling of emphasized words B43d) blunted facial expressions
Line 44	Tom looks around the room and occasionally picks his nose while swinging his one leg slowly	B44a) Individ seems distracted by other objects in the room
13:00		
Line 45	I praise them for their efforts and invite them to repeat the lines again with me before we carry on with the rest of the song	B45a) Therapist verbally invite participants to sing B45b) Repetition of verse

Line 46	I verbally invite Ben again to sing clearer and louder	B46a) Therapist verbally encourage Individ participants to sing
Line 47	I strum with a lot more enthusiasm but still at a moderately slow tempo putting more emphasis on the syncopated beats (beat 2 and 4)	B47a) Therapist strum guitar with enthusiasm B47b) Therapist plays emphasized syncopated beat B47c) Therapist plays moderately fast
Line 48	The participants sing a bit louder and pronounce most of the words clearer than before however it is still very close to being mumbled. They stare at me with blunted facial expressions still singing in a monotonic manner	B48a) Participants remember emphasized words in verse B48b) Participants sing louder and pronounce words clearer B48c) Mumbling of some words B48d) Monotonic singing B48e) Blunted facial expressions
13:28		
Line 49	I immediately move the chorus of the song	B49a) Therapist introduce chorus section to participants
Line 50	I slow the tempo down of the song so I can sing the words clearly to the participants	B50a) Therapist decrease tempo B50b) Therapist sings slow B50c) Therapist sing words clearly
Line 51	The first animal I sing about is an octopus	
Line 52	After I greet the animal I stop the music to ask the participants what an octopus looks like	B52a) Therapist ask participants what an octopus looks like
Line 53	Tom immediately waves his arms as if they were octopus tentacles. He makes eye contact with me and smiles widely	B53a) Individ participant imitate animal movement B53b) Individ participant associates song with animal in real life B53c) Individ makes meaningful eye contact with therapist B53d) Individ smiles
Line 54	The rest of the group copies his movements enthusiastically	B54a) Group imitates Individ participants movement with enthusiasm
Line 55	Christopher starts verbally describing the tentacles and refers to them as tails. He makes eye contact with me as he explains using big arm movements	B55a) Individ verbally associates lyrics with real life animal B55b) Individ participant verbally makes own interpretation and description of animal B55c) Individ makes eye meaningful contact with therapist
Line 56	I copy the movements of the participants	B56a) Therapist imitate participants movement

Line 57	I explain to them the story of the song by explaining that we are swimming in the sea, then we see an octopus and then we greet him by singing "Hello Mr. Octopus". Lisa explains that the octopus is "the green one" to which I agree with her	B57a) Therapist verbally explain line B57b) Individ associates animal with color
Line 58	I repeat the line where we sing hello to Mr. Octopus to which the participants only sing the word "octopus"	B58a) Repetition of chorus line B58b) Participants remember emphasized words in chorus
Line 59	I continue with the rest of the story to where we greet the next animal, which is a shark	
Line 60	I explain that it is a friendly shark and ask the participants if they all know what a shark is	B60a) Therapist verbally explain line B60b) Therapist ask participants if they all know what a shark is
Line 61	Tom calls out enthusiastically "yes"	B61a) Individ participant responds spontaneously
Line 62	I prepare them by saying we are going to sing hello to Mr. Shark	B62a) Therapist verbally invite participants to sing
Line 63	Two of the members sing along softly but pronounce the words clearer and more melodically. Lisa makes a movement using her right arm matching the pulse of the music	B63a) Individ makes arm movements matching the pulse of the music B63c) Two participants sing very softly B63d) Two Individ pronounce words clearer B63e) Two Individ sing more melodically
Line 64	I invite them to sing the greeting of Mr. octopus and Mr. Shark with me from the beginning	B64a) Repetition of chorus line B64b) Therapist invite participants to sing
Line 65	Two members sang with but one can hear most of the words being mumbled softly	B65a) Mumbling of words B65b) Repetition of chorus
Line 66	Tom kicks and swings his feet to the rhythm of the guitar strumming	B66a) Individ swings legs matching the pulse of the music
Line 67	Christopher makes movements using both his hands that matches the main pulse of the song	B67a) Individ moves arms matching pulse of the music
Line 68	We repeat the greetings of the first two animals	B68a) Repetition of chorus lines
14:46		
Line 69	I introduce the next animal that comes swimming by next, which is a jellyfish	
Line 70	I ask the group what a jellyfish is	B70a) Therapist ask participants what is a jellyfish

Line 71	Tom makes a blowing sound as he waves his hands on top of his head as to indicate what a jellyfish looks like	B71a) Indiv imitate animal verbal sounds B71b) Indiv imitate animal movement
Line 72	Ben starts to explain that a jellyfish has a lot of tails	B72a) Indiv participant associates song with animal in real life B72b) Indiv participant makes own interpretation and description of animal
Line 73	After Ben's explanation I continue the song by greeting Mr. Jellyfish	B73a) Repetition of chorus line
Line 74	The participants sing along with a lot more enthusiasm and higher energy	B74a) Participants sing with enthusiasm and higher energy
Line 75	They pronounce the word "jellyfish" very clearly and with emphasis	B75a) Participants sing emphasize words loudly B75b) Clear pronunciation of emphasized words
Line 76	Tom seems like he wants to jump up but only hops in his chair. Overall the participant's facial expressions are different. They smile more often and make eye contact with each other and me. Their overall focus is higher and they seem more interested and curious about the song than before	B76a) Indiv participant hop in their chairs and seem to want to jump up B76b) Participants facial expressions shift from blunted to smiling B76c) Participants occasionally make meaningful eye contact with therapist and each other B76d) Participant curious and interested in music B76e) Participants focus on therapist and music
Line 77	He moves his arms back and forth on the syllables of the word "jellyfish"	B77a) Participant emphasize syllables of word by swinging arms to the pulse of the music
Line 78	I immediately continue the song by explaining that another animal's swims by that we greet which is Mr. Crab	B78a) Therapist verbally explain line
Line 79	As I say "Mr. Crab" I lift up my strumming hand (right hand) and imitate the movement of that of a crabs claws	B79a) Therapist imitate animal movement B79b) Therapist model hand gesture to participants
Line 80	Two of the participants copy this movement	B80a) Two participants imitate therapist's movement
Line 81	I continue to sing the section where we greet Mr. Crab	B81a) Repetition of chorus line
Line 82	The participants do not sing that line with me. Christopher sits and looks at me with his arms folded while staring at me with a blunted facial expression.	B82a) Participants do not sing B82b) Indiv blunted facial expression B82c) Participants focus on therapist and music

	The rest of the group attentively stare at me	
Line 83	I verbally invite the participants to sing the section where we greet Mr. Jellyfish and Mr. Crab	B83a) Therapist invite participants to sing B83b) Repetition of chorus lines
Line 84	All members sing a long, this time with more enthusiasm and much louder	B84a) Participants sing with enthusiasm B84b) Participants sing louder
Line 85	The animals are emphasized, especially the jellyfish.	B85a) Emphasized words sung clearest by participants B85b) Participants remember emphasized words of chorus
15:24		
Line 86	I verbally invite the group to sing hello to all the animals as we are swimming by in the story	B86a) Therapist verbally invite participants to participate B86b) Repetition of chorus lines
Line 87	They forget which animal we greet first (Octopus) and I give them a quick verbal reminder to which animal is next as we continue with the song	B87a) Participants forgets first animal greeted B87b) Therapist give verbal reminder of lyrics for chorus
Line 88	Tom sings along monotonically when we greet the next animal (Shark) however he smiles while singing	B88a) Indiv monotonic singing B88b) Indiv sings alone B88c) Indiv smiles
Line 89	I remind them that Mr. Jellyfish and Mr. Crab is next to be greeted	B89a) Therapist give verbal reminder of lyrics for chorus
Line 90	The participants sing along with calmly	B89a) Participants sing calmly
Line 91	The music is moderately soft and moderately fast and lively however the participants seem unsure of the melody and words and Tom is the only participant that can be heard singing and seems interested in the activity. The other participants look around the room and seem distracted	B91a) Participants sing moderately soft B100b) Unsure of melody B91c) Participants unsure of chorus lyrics B91d) Participants distracted by objects in the room B91e) Indiv focus on therapist and music B91f) Therapist's music is lively and moderately fast paced
15:46		
Line 92	We immediately continue with the song by singing the verse	B92a) Repetition of verse
Line 93	Ben sings the loudest of all the members	B93a) Indiv participant sings loudest in group
Line 94	He seems to remember all the words very well and his singing has a playful quality to it	B94a) Indiv participant remembers verse words B94b) Indiv remembers melody B94c) Indiv singing is playful

Line 95	The rest of the group mumble some of the words and sing the words emphasized such as "under", "sea", "fish" "swimming" and "me" louder and with a lot more certainty	B95a) Mumbling of words B95b) Emphasized words pronounced clearer B95c) Participants remember emphasized words of verse
Line 96	The quality of the groups voices are flat and moderately soft	B96a) Participants sing moderately soft B96b) Participants flat tone quality of singing
Line 97	We repeat the verse. All participants occasionally make eye contact with me and seem more focused on the music	B97a) Repetition of verse B97b) Participants make meaningful eye contact with therapist and each other B97c) Participants focus on music
Line 98	The second time we repeat the verse one of the participants sing "under the sea" in a very high pitched voice and then goes back to singing in his with the rest of the group	B98a) Indiv adjusts quality of voice to higher pitched B98b) Indiv participant responds spontaneously and playful
16:03		
Line 99	When the verse ends I continue with the chorus of the song, which is greeting the animals individually	B99a) Repetition of chorus
Line 100	I ask the group who we greet first	B100a) Therapist ask participants which animal is greeted first
Line 101	Lisa is the only one that answers by saying "the green one"	B101a) Indiv spontaneously shouts out an answer B101b) Participant associates color of with animal
Line 102	I praise her and say that we greet Mr. octopus first	B102a) verbally affirms participants for associating the animal with a color
Line 103	I start to sing the greeting of Mr. Octopus very softly and gradually singing and strumming the guitar louder and louder, creating some sort of anticipation. The participants body language change from low energy and boredom to interest and curiosity	B103a) Therapist sings softly B103b) Therapist add crescendo B103c) Therapist plays loud and energetic B103d) Indiv body language indicate interest and excitement
Line 104	The louder I start to sing louder. Some of the participants matching start to sing with me	B104a) Participants respond excitedly to dynamic shift B104b) Participants adjust to tempo and dynamic shift with ease B104c) Participants adjust their singing to lively and louder
Line 105	I pause the song and explain that Mr. Shark is next in line to be greeted	B105a) Therapist give verbal reminder of lyrics of chorus

Line 106	I sing and strum loudly as I lean forward and sing hello to Mr. Shark	B106a) Therapist body language is inviting B106b) Therapist sings and strums loudly
Line 107	The participants start moving their arms and legs excitedly at a fast pace	B107a) Participants respond with excitement B107b) Participants swing legs and arms at a fast pace
Line 108	Some of them start to talk and explain to me what a shark is and looks like. They make meaningful eye contact with me as they all explain and describe the animals to me	B108a) Participants eagerly verbally explain lyrics to therapist B108b) Participants make meaningful eye contact with therapist
Line 109	I continue the song by announcing that Mr. Jellyfish is next to be greeted	B109a) Therapist give verbal reminder of lyrics of chorus
Line 110	I start to sing hello to Mr. Jellyfish by strumming and singing softly and then gradually singing and strumming louder and louder, creating anticipation	B110a) Therapist sings softly B110b) Therapist add decrescendo B110c) Therapist plays loud and energetic B110d) Therapist creates musical anticipation
Line 111	The participants sing along, also gradually singing louder and louder and more enthusiastically as we sing louder while smiling and making eye contact with me	B111a) Participants respond excitedly to dynamic shift B111b) Participants adjust to tempo and dynamics shift with ease B111c) Participants make meaningful eye contact with therapist
Line 112	I announce the next animal swimming by which is Mr. Crab	B112a) Therapist give verbal reminder of lyrics for chorus
Line 113	As we sing loudly and cheerfully hello to Mr. Crab, Lisa and Tom imitated that of the claw of a crab using her left hand	B113a) Participants sing loudly and cheerfully B113b) Two Indiv imitate animal movement B113c) Two Indiv associate imitation of animal movement with song
Line 114	The animal names are such the loudest and the participants seem more confident with the melody. The lyrics are pronounced clearer and their overall engagement is energetic. Their body language indicates an eagerness to participate as they are sitting up straight and make spontaneous movements	B114a) Participants remembers melody B114b) Participants remembers emphasized words of verse B114c) Participants sing loudly and energetically B114d) Participants pronounce lyrics clearly B114e) participants body language indicates eagerness to participate
16:36		
Line 115	I continue with the song by returning to the verse of the song	B115a) Repetition of verse

Line 116	I slow down the tempo; the strumming of my guitar is also different as I added a combination of picking and strumming in contrast to only strumming in the chorus of the song	B116a) Therapist slow down tempo B116b) Contrasting guitar accompaniment style
Line 117	I my quality of voice is much more gentle and moderately soft	B117a) Therapist sings gentle and moderately soft
Line 118	The group members start sing gentle and moderately soft with me	B118a) Participants match therapist gentle and moderately soft singing B118b) Participants adjust to tempo and dynamic shift with ease
Line 119	All members seem to pronounce all the words of the song quit well however they sing very monotonic, as they seem unsure of the melody at certain points. Tom sings the loudest	B119a) Participants remember most lyrics by memory of verse B119b) Words are pronounced clearly B119c) Participants monotonic singing B119d) unsure of verse melody B119e) Indiv sings the loudest
Line 120	The quality of their voices is monotonic and the mumbles some of the words they seem unsure of however the emphasized words are sung clearly and louder	B120a) Participants sing monotonic B120b) mumbling of some words B120c) Unsure of some verse words B120d) Participants sing emphasized words loud and clear
Line 121	Tom sings the loudest of all as he swings his legs back and forth almost matching to the rhythm of the song	B121a) Indiv participant sings louder than group B121b) Indiv swings legs energetically
Line 122	The rest of the group is watching me attentively with their hands folded on their laps or their arms folded. They seemed focused and interested in the music. Overall their facial expressions appear to be blunted. The overall energy shifted to low.	B122a) Participants blunted facial expressions B122b) Participants focus and interested in music B122c) Sudden energy shift from high to low B122d) Body language shift to still and closed off
Line 123	I praise the group for their effort	B123a) Therapist verbally affirms participants at the end of the song for their efforts
Session notes	The song learning was a bit more difficult without the board	
	It also took a bit longer than when using the communication board	
	I had to break up the song in very small sections and repeat each phrase many times	

	However I do find that the sessions was much more socially engaging, there was a lot of healthy eye contact being made throughout the sessions and I was able to musically adjust the song thus making the song more exciting and interactive for the participants
	I adjusted the strumming of the chorus and the verse and I believe it made the words and melody more memorable for the participants in the end

## Appendix Q: Thick descriptions C

C	Under the water	
20-Apr-16	Session 2 with pcs Group A	
Time (minutes into session)	Thick description	Code
8:38		
Line 1	I put the communication board on my lap	
Line 2	I remind the group that we learned a new song in the previous session and that we are going to sing that song again	
Line 3	I start by pointing to the first symbol, which is the symbol for the word "under"	C3a) Therapist direct attention to PCS
Line 4	I start to sing the first line of the verse section lively and loud without guitar accompaniment	C4a) Therapist sings loud and lively
Line 5	The group members sing along almost instantly with a lot of enthusiasm, Ellen and Tshepo smile occasionally while the rest of the participants sit with blunted facial expressions	C5a) Participants instantly sing along with therapist C5b) Participants sing with enthusiasm C5c) Two indiv occasionally smile C5d) Blunted facial expressions
Line 6	The quality of their voices is lively and melodic. They seem to read the picture symbols with ease as they sing louder and with confidence	C6a) Participants quality of singing is lively and melodic C6b) Participants remember PCS with ease C6c) Participants sing with confidence C6d) Participants sing louder
Line 7	They are very sure of the words of the song but seem unsure of the melody in certain parts of the song during the first time we sing the verse	C7a) Participants remember PCS with ease C7b) Participants unsure about melody
Line 8	The second time we sing it, Tshepo and Ellen point with their index fingers downwards when we sing the word "under"	C8a) Indiv participant imitates PCS by pointing downwards C8b) Indiv sing intended PCS meaning

Line 9	Tshepo also points so himself when we sing the word "me". Iconic words such as "fish" is sung louder and emphasized	C9b) Indiv participant imitates PCS by pointing to himself
Line 10	The participants watch my fingers very closely as I point to the symbols as we sing it	C10a) Participants focused on PCS
Line 11	The second time we sing the verse, the participants seem surer about the melody than the first time we sang it	C11a) Participants remember melody C11b) Repetition of verse
Line 12	Ian was absent from school on the day of the first session	C12a) Participants first session
Line 13	He sits on the tip of his chair and attentively watches my finger and try to sing with	C13a) Participant body language indicate interest and eagerness to participate C13b) Indiv interested in PCS
Line 14	The overall quality of the groups singing is loud, lively and all the words are pronounced and sang clearly and correct	C14a) Participants sing loudly and lively C14b) Participants recognize PCS with ease C14c) Participants remember words with PCS absent C14d) Clearer pronunciation of words
9:04		
Line 15	We continue to the chorus section	
Line 16	I point to the picture symbol representing the word "hello"	C16a) Therapist direct attention to PCS
Line 17	The participants sing with enthusiasm and loudly but sound a bit unsure of what animal gets greeted next until I add the picture symbols	C17a) Participants sing loud C17b) Participants dependent on PCS to remember words C17c) Participants sing with enthusiasm C17d) Participants immediately remember PCS
Line 18	As I add the picture symbol for the first animal we greet, Ian shouts out "shark"	C18a) Indiv participant recognize PCS immediately C19b) Participants spontaneously shouts intended PCS meaning
Line 19	I continue singing and as the picture is placed on the board, the participants say/sing loudly "octopus"	C19a) Participants recognize PCS immediately C19b) Participants sing loudly
Line 20	We continue to the next animal which is a shark	
Line 21	I point to the hello picture symbol and then only do I move on to the next picture symbol	C21a) Therapist direct attention to PCS

Line 22	The participants immediately sing the name of the animal with loudly as soon as I place the picture symbol. Tshepo and Ian smile as we sing however the rest of the group started attentively at the board with blunted facial expressions on their faces	C22a) Participants recognize PCS immediately C22b) Blunted facial expression C22c) Participants sing loudly C22d) Two indiv smile C22e) Participants dependent on PCS to remember words C22f) Participants focused on PCS
Line 23	Ian seems excited when it turned out to be a shark as he smiles widely	C23a) Indiv participant smiles widely
Line 24	He waved his arms as soon as he saw the picture symbol of a shark, imitating the fins of a shark	C24a) Participant imitate PCS by swimming like a shark
Line 25	I continue by first pointing to the hello picture symbol	C25a) Therapist direct attention to PCS
Line 26	The participants immediately remember the jellyfish symbol	C26a) Participants immediately remembers PCS
Line 27	They are no longer singing the name of the animal but rather saying it	C27a) Speaking of lyrics instead of singing
Line 28	I point to the hello picture symbol before I add the last picture symbol of the animal being greeted	C28a) Therapist adds last PCS of chorus C28b) Therapist direct attention to PCS
Line 29	The last animal to be greeted is Mr. Crab	
Line 30	As is point to the hello picture symbol, I make sure to sing loud and clearly the melody again thus leading to the last animal which everyone sang again loudly and excitedly. The participants recognized all the picture symbols used for the chorus immediately and with ease	C29a) Therapist sings melody and lyrics loud and clear C29b) Therapist direct attention to PCS C29c) Participants sing loudly and with excitement C29d) Iconicity of word seem higher C29e) Participants immediately recognize PCS with ease
Line 31	Tshepo pronounced the word "crab" in a higher and more playful and jumped up from his chair lifting his one arm up in the air and sitting down again	C31 a) Indiv participant changes pitch of voice to higher C31b) Indiv participant sings playful and lively C31c) Indiv participant jumps PCS up from chair in excitement C31c) Indiv participant makes waving arm movements
9:30		
Line 32	I cheerfully start singing the verse again	C32a) Repetition of verse C32b) Therapist sings cheerfully
Line 33	I point to each picture symbol as we sing it	C33a) Therapist direct attention to PCS

Line 34	All participants are singing loudly and enthusiastically and with higher energy in their voices	C34a) Participants sing loudly 34b) Participants sing with high energy and enthusiasm
Line 35	They seem excited to be singing the song as they sit up straight enthusiastically and interested	C35a) Participants respond in excitement C35b) Participants body language indicate interest and excitement
Line 36	Jack starts to clap the main pulse of the song as we continue with the song	C36a) Indiv participant claps hands to the pulse of the song
Line 37	Tshepo points to himself when we sing the word "me" and points downwards to the ground using his index finger when we sing the word "under"	C37a) Indiv participant imitates PCS by pointing to himself C37b) Indiv Associate PCS with movement
Line 38	The participants watch my finger closely as I point to each picture symbol	C38a) Participants focus on PCS C38b) Therapist direct attention to PCS
Line 39	We sing the verse twice in total with high energy and the participants seem to remember the melody and read the picture symbols with ease. The participants also seem to smile and move their bodies more instead of sitting still with their hands into their lap	C39a) Repetition of verse C39b) Participants remember melody C39c) Participants smile C39d) Participants immediately remember PCS with ease C39e) Participants focused on PCS C39f) Participants body language indicate interest and excitement
Line 40	I praise them for remembering the song so well	C40a) Therapist verbally give praise
10:10		
Line 41	I place the board on a chair next to Jack and me	
Line 42	I fetch my guitar and sit down	
Line 43	I ask Albert to help me to strum the guitars he is sitting nearest to me at the moment	C43a) Therapist invite indiv participant to strum guitar
Line 44	I show him how to strum the string using ones index finger	C44a) Therapist model guitar strumming
Line 45	He kindly agrees	C45a) Indiv eager to participate
Line 46	He stands up and stands in front of the guitar	
Line 47	Albert start to strum the guitar slowly but very clearly and loud. He also sings along in a monotonic and low energy quality of voice	C47a) Indiv participant strums guitar slowly, loudly and clearly C47b) Indiv monotonic singing
Line 48	As he strums the guitar for the first time, the group starts singing the first line of the song with him,	C48a) Participants spontaneously sing song slowly and loudly

	matching Albert's tempo	
Line 49	I join in by using my guitar strumming hand to point to the picture symbols on the board and my other hand to press the guitar chords while Albert does the strumming work however the group sing more melodic	C49a) Therapist support indiv participant musically C49b) Therapist direct attention to PCS C49c) Therapist presses guitar chords C49d) Participants sing melodic
Line 50	The first verse dragged a bit because Albert did not keep the pulse at all times as he was trying to sing, read the picture symbols and strum the guitar	C50a) Indiv participant struggle to multi-task reading PCS, sing and strum guitar C50b) Indiv participant struggle to keep steady beat C50c) participants dragged singing C50d) Participants struggle to match singing with music C50e) Indiv dependent on PCS to remember words
Line 51	The group listened attentively to his strumming and waited for him to strum the next chord every time with blunted facial expressions and very low energy	C51a) Group matches singing to indiv participants strumming C51b) Indiv strums at a slow and uneven tempo C51c) Blunted facial expressions
Line 52	We continued with the chorus of the song	C52a) Repetition of chorus
Line 53	Albert kept the pulse with ease at the beginning of the chorus section	C53a) Indiv participant strums guitar in a steady beat
Line 54	The participants closely still watch the board and follow my finger as I point to the picture symbols as we sing music louder and more accurate pronunciation of words	C54a) Participants focus on PCS C54b) Participants sing louder C54c) Participants recognize PCS with ease C54d) Participants dependent on PCS to remember words
Line 55	Before returning to the verse again Albert when to sit down and I ask if anyone else would like to help me with the strumming	C55a) Therapist invite participants to volunteer strumming the guitar
Line 56	Jack, Tshepo, Ellen and Ian sit up straight and raise their hands with excitement	C56a) Three participants enthusiastically volunteer C56b) Participants body language indicate excitement and eagerness to participate
Line 57	I ask Ellen to help me with the strumming for the verse	C57a) Therapist verbally invite indiv participant to strum the guitar C57b) Repetition of verse
Line 58	Ellen strums the guitar softly, gentle and rhythmically while I point to the picture symbols with one hand	C58a) Indiv participant strums guitar softly, gentle and rhythmical C58b) Therapist direct attention to PCS

Line 59	The group sings along, matching her gentle and soft strumming however the words are mumbled most of the time but they seem to read the picture symbols with ease. The quality of the participants singing of the participants are very low in energy	C59a) Mumbling of words C59b) Participants sing softly C59c) Participants recognize PCS with ease C59d) Participants sing with low energy
Line 60	She stomps right before the last strum and I strum the last chord	C60a) Indiv participant does not finish musical phrasing C60b) Therapist ends musical phrase
Line 61	I ask who want to be next to strum for the chorus section	C61a) Therapist invite participants to volunteer strumming of guitar C61b) Repetition of chorus
Line 62	All the participants excluding Albert raise their hands enthusiastically	C62a) Participants enthusiastically volunteer to strum the guitar C62a) Participants body language indicate excitement and eagerness to participate
Line 63	I ask Tshepo to help me with the chorus section	C63a) Therapist invite indiv participant to strum guitar
Line 64	He strums the guitar gently while I point to the picture symbols using one hand	C64a) Indiv participant strums guitar gently C64b) Therapist direct attention to PCS
Line 65	He sings softly as he strums the guitar strings	C65a) Indiv participant sings softly
Line 66	The rest of the group stop singing and Tshepo sing alone softly and reading the picture symbols while he strums the guitar	C66a) Group does not sing with indiv participant C66b) Individual sings alone softly C66c) Indiv dependent on PCS to remember words
Line 67	He often looks at the board to see what animal is must be greeted next	C67a) Indiv dependent on PCS to remember words
Line 68	I sing along with him	C68a) Therapist support indiv participant musically
Line 69	I invite Ian to strum the guitar next	C69a) Therapist invite indiv participant to strum guitar
Line 70	He strums the guitar moderately loud and slowly paced with a prominent beat while I point to the PCS on the board	C70a) Indiv participant strums guitar moderately loud and slowly paced C70c) Indiv keeps steady beat C70b) Therapist direct attention to PCS
Line 71	All members sing along slowly and mumbling as Ian checks the board often to make sure of the words	C71a) Indiv dependent on PCS C71b) Participants sing softly C71c) Mumbling of words
Line 72	I ask Jack to come help me strum the chorus	C72a) Therapist invite indiv participant to strum guitar C72b) Repetition of chorus
Line 73	He gently strums the guitar strings	C73a) Indiv participant strums guitar gently

Line 74	He strums very slowly thus making the song slower	C74a) Indiv participant strums slowly
Line 75	The rest of the group adjust their singing to match the tempo of Jack's playing	C75a) participants sing slowly
Line 76	They sing loudly and pronounce all the words clearly and enthusiastically. Ian and Tshepo shout out the animal names early as Tshepo jumps up from his chair in excitement. Albert and Ellen look around in the room and sing occasionally with	C76a) Participants sing loudly C67b) Participants remember PCS with ease C76c) Words pronounced clearly C76d) Indiv jumps up in excitement C76e) Two indiv shouts out intended word of PCS meaning C76f) Two indiv lost interest and focus
Line 77	Tshepo and Ian's voices start to have a more playful quality to it as they start to adjust the pitch of their voices by singing higher	C77a) Two indiv Participants change pitch of voices to higher C77b) Two indiv sing more playfully
Line 78	I thank Jack and he sits down	C78a) Therapist verbally praise indiv participant
13:49		
Line 79	I verbally invite the group to sing the song from the beginning with me	C79a) Therapist verbally invite participants to sing C79b) Repetition of verse
Line 80	We sing the song loud and energetic	C80a) Therapist and participants sing loudly and energetic C80b) Participants sing and participate with high energy
Line 81	All the words are pronounced clearly by the participants and the participants occasionally look at the board but seem more focused at looking at the guitar and me. They seem to remember most of the words by memory	C81a) Participants remember most lyrics from memory C81b) Clear pronunciation of words C81d) Focus on therapist
Line 82	I use both my hands to play the guitar so I am not pointing to the board	C82a) Participants read PCS by themselves C82b) Therapist plays guitar with both hands
Line 83	The members look at my inviting facial expression and make eye contact with me	C83a) Participants make eye contact with therapist C83b) Therapist has inviting and uplifting facial expression
Line 84	Ian pretends to be playing a guitar and Tshepo taps his fists vigorously on his lap to the rhythm of the song	C84a) Indiv participant imitates therapist movement of strumming guitar C84b) Indiv participant associates music with playing of instrument C84c) Indiv participant taps rhythm of song on his lap vigorously
Line 85	Some of the members occasionally glance at the communication board, especially when we greeted	C85a) Participants dependent on PCS to remember words

	the different animals	
Line 86	Everyone is sitting up straight and moving their upper bodies in some manner to the rhythm of the song while smiling	C86a) Participants spontaneously move bodies to pulse of music
Line 87	As we greet the animals, the group sings the names of the animals louder than the rest of the words	C87a) Participants sing louder C87b) Iconicity of words seem higher
Line 88	Ian waves at the board and greets Mr. Jellyfish using spoken language after the group greeted Mr. Jellyfish using song	C88a) Indiv participant imitates intended PCS C88b) Indiv participant associates intended PCS with movement of greeting C88c) Indiv greets animal using spoken language
Line 89	During the last repeat of the verse Ian continues to pretend that he is playing a guitar	C89a) Indiv participant imitates therapist movement of strumming guitar C89b) Indiv participant associates music with playing of instrument
15:00		
Line 90	I praise the group for singing very nicely	C90a) Therapist verbally praise participants
Line 91	I ask Jack if he will point to the picture symbols on the boards for the group as he is sitting closest to the board from all the participants	C91a) Therapist invite indiv participant to point to PCS
Line 92	He agrees to help me	C92a) Indiv eagerly participant agrees to help therapist
Line 93	I explain to the group and Jack in particular the structure of the song	C93a) Therapist verbally explain song structure to participants
Line 94	I start strumming the guitar gently and in a slow pace	C94a) Therapist strums guitar gently and slowly paced C94b) Repetition of verse
Line 95	As soon as we start to sing Tshepo in particular start singing very loudly, the rest of the group joins him and also start to sing loud and energetic	C95a) Indiv participant spontaneously sings loud and energetic C95b) Participants sing with high energy and excitement C95c) Participants smile
Line 96	I strum louder and more energetically	C96a) Therapist matches participants singing with guitar
Line 97	Jack points to each picture symbol as we sing	C97a) Indiv participant directs attention to PCS
Line 98	Ian pretends to play a guitar	C98a) Indiv participant imitates therapist guitar playing C98b) Indiv participants associates music with playing of instruments

Line 99	The participants follows Jack's finger attentively the moment they forget the words. They first look at me and then start to mumble the words thereafter they have to read the picture symbols first. Tshepo excitedly stomps his feet on the floor to the rhythm of the music	C99a) Participants dependent on PCS to remember words C99b) mumbling of words C99c) Indiv stomps feet on floor to the rhythm of music
Line 100	I delay the music slightly when we move to the chorus section of the song	C100a) Therapist delays music between the verse and chorus section C100b) Repetition of chorus
Line 101	Jack points to the first picture symbol of the verse however the rest of the group start to sing the chorus section at the correct time and the rest of the group follows and Jack adjust his finger	C101a) Indiv participant points incorrect PCS C101b) Participants read PCS by themselves C101c) Indiv participants adjust pointing to PCS
Line 102	Tshepo stands up and hops up and down at the same place and sing very loudly as we greet the animals	C102a) Indiv participant jumps up in excitement C102b) Indiv participant sings loudly C102c) Indiv sing and moves with high energy
Line 103	Ian waves at the board as we greet the animals	C103a) Indiv participant imitated PCS by waving movement
Line 104	Ian continues to pretend to be playing a guitar, as we sing the last word "me", Ian jumps up and gives a final strum on his imaginary guitar as I strum the last final chord on my guitar. Throughout the last repeat of the verse section, Tshepo stands up from his seat and does a dance while he sings along	C104a) Indiv participant imitates therapist movement of playing guitar C104b) Indiv participant associates music with playing of instruments C104c) Indiv participant finish musical phrase on imaginary guitar C104d) Indiv dances
Line 105	The rest of the group sing along excitedly and loudly until the very end while still reading the picture symbols occasionally but also seem more interested in looking at me and my guitar	C105a) Participants sing excitedly and loud C105b) Participants interested and focused on therapist and guitar C105c) Participants occasionally make meaningful eye contact with therapist
Sessions notes	The participants remembered the song quit well	
	I had to sing it a few times and emphasize the key words for them to remember a few words of the song they seemed unsure of	
	I gave each participant the opportunity to strum the guitar while I point to the picture symbols	

	At the very end Jack pointed to the picture symbols on the communication board and I could play my guitar properly
	This session felt more interactive than the previous session as there was better eye contact than before
	The participants looked at me more often than at the communication board

Appendix R: Thick descriptions D

D	Under the water	
20-Apr-16	Session 2 without pcs Group B	
Time (minutes into session)	Thick description	Code
8:29	Transcription	Code level 1
Line 1	I start by reminding the participants that we learned a song in the first sessions	
Line 2	Tom immediately says the first line of the song which is "under the water"	D2a) Indiv participant immediately verse remembers lyrics D2b) Indiv verbally says first line
Line 3	I slowly and gently start to play the introduction of the song	D3a) Therapist strums guitar slowly and gentle D3b) Therapist musically support Indiv by adding guitar accompaniment to Indiv singing
Line 4	I start to sing the first line gentle and slowly	D4a) Therapist sings slowly and gentle
Line 5	Three participants start to sing with me softly, they sing only a few words occasionally and I struggle to hear them sing clearly. They look at me and each other and occasionally stare around the room with blunted facial expressions	D5a) Unsure about verse lyrics D5b) Participants sing very softly D5c) Participants distracted by objects in the room D5d) Participants occasionally make eye contact with therapist and each other D5e) Blunted facial expressions
Line 6	Tom starts to rock his upper body from one side to the other on the rhythm of the song	D6a) Indiv rocks upper body matching the pulse of the music
Line 7	Some of the words such as "lots and lots" are mumbled by the participants singing	D7a) Mumbling of non-emphasized words
Line 8	Words such as "under", "sea", "swimming" and "me" are pronounced clear	D8a) Emphasized words pronounced clearest by participants D8b) Participants remember emphasized words of verse

Line 9	After singing the verse once I verbally invite the participants to sing the verse again with me	D9a) Repetition of verse D9b) Therapist invite participants to sing
Line 10	I count to 4 in a faster tempo and start to strum the guitar and sing the song much faster and livelier	D10a) Therapist strums guitar and sings fast and lively
Line 11	The participants sing softly and mumble some of the words	D11a) Mumbling of words D11b) Participants sing softly
Line 12	All of the members sit dead still in their chairs with their hands in their laps except for Christopher who smiles widely and rocks his upper body gently from the one side to the other to the main pulse of the song .The rest of the group stares at the guitar with blunted facial expressions	D12a) Participants physically respond in robotic manner D12b) Indiv participant rocks upper body matching the pulse of the music D12c) Indiv participant portrays emotions of enjoyment through facial expression D12d) Indiv smiles D12e) Participants blunted facial expressions
Line 13	Christopher mumbles most of the words	D13a) Indiv participant mumbles words
Line 14	All the participants look at my guitar, my fingers strumming the guitar and pressing the chords and make regular eye contact with me when I look at them	D14a) Participants respond robotically D14b) Participants make eye contact with therapist D14c) Low energy participation
Line 15	After we sing the verse for a second time, I pause the music and ask the participants what comes after we sang about swimming in the sea	D15a) Repetition of verse D15b) Therapist asks participants which verse line is sung next
Line 16	Tom enthusiastically answers "octopus"	D16a) Indiv participant spontaneously shouts answer D16b) Indiv remembers chorus lyrics
Line 17	I immediately start singing the chorus where we greet Mr. Octopus	
Line 18	The phrase starts soft with a strumming in double time that gradually grows louder in dynamics	D18a) Therapist strums guitar softly D18b) Therapist gradually increases volume of guitar strumming
Line 19	Tom sings softly with me	D19a) Indiv participant sings with therapist softly
Line 20	The rest of the group quietly looks at the guitar and me with blunted facial expressions	D20a) Participants respond robotically D20b) Blunted facial expressions
Line 21	I continue to the next animal we greet which is Mr. Shark	

Line 22	Tom and Christopher sing softly with me as we greet Mr. Shark by only singing the word "shark" loudly	D22a) Two participants remembers emphasized words of verse D22b) Participants unsure of chorus lyrics
Line 23	I continue with the next animal being greeted	
Line 24	I pause the music and my singing before the part where we name the animal being greeted and invite the participants to say whom we greet next	D24a) Therapist ask participants which animal is greeted next D24b) Therapist pauses music
Line 25	Lisa makes imitates that of a crabs claw using both her hands and shouts out "sail" and "castle sands"	D25a) Indiv participant imitate animal movement D25b) Indiv participant spontaneously shouts out related word to theme of the song D25c) Indiv associates own related meaning to song theme
Line 26	I name the animal we need to greet which is Mr. Jellyfish	D26a) Therapist verbally remind participants of lyrics for chorus
Line 27	I finish the chorus by greeting Mr. Crab	
Line 28	The participants continue to mumble and sing very softly the words with me with blunted facial expressions	D28a) Participants sing softly D28b) Mumbling of words D28c) Blunted facial expressions
Line 29	They seem sure about the melody but unsure of some of the words	D29a) Unsure about chorus lyrics D29b) Participants immediately remembers melody
9:46		
Line 30	I continue with the song by returning to the verse	D30a) Repetition of verse
Line 31	I sing and strum gently and slower than the chorus section	D31a) Therapist strums guitar and sings softly D31b) Therapist strums guitar slower
Line 32	The guitar accompaniment is a combination of strumming and picking of the root note of each chord	
Line 33	Tom is the only participants that sing with me but very softly and only a few of the emphasized words. I sing alone most of the time while the rest of the group stares at me with blunted facial expressions. The overall energy of the participants are very low	D33a) Indiv Participants sing softly with therapist D33b) Indiv remembers emphasized words of verse D33c) Participants engage with low energy D33d) Therapist sings alone D33e) Blunted facial expressions
Line 34	Tom mumbles words such as "lots and lots"	D34a) Indiv Mumbles non emphasized

		words
Line 35	Words such as "under", "sea", "swimming" and "me" can be heard clearer than the mumbled words	D35a) Emphasized words sung clearest by participants D35b) Participants remember emphasized words of verse
Line 36	The quality of his voice is monotonic	D36a) Indiv singing quality is monotonic
Line 37	Christopher and Tom gently and slowly rock their upper bodies from one side to the other to the rhythm of the song but only for a short while and then goes back to sitting still	D37a) Two participants rock upper bodies matching the pulse of the music briefly
Line 38	After singing the verse only once, I directly move to the chorus section of the song	D36a) Repetition of chorus
Line 39	Only Tom sing with me again but this time a bit louder while the rest of the group stares at me and the guitar with blunted facial expressions	D39a) Indiv participant sings louder D39b) Participants blunted facial expressions D39c) Low participation levels
Line 40	When we get to the part where the animal must be named, I keep quiet and queue the participants to sing which animal we are greeting	D40a) Therapist invite participants to sing by themselves
Line 41	Tom is the one to remember	D41a) Indiv participant immediately remembers chorus lyrics
Line 42	He says clearly "octopus"	D42a) Indiv participant says animal name clearly
Line 43	He speaks the word but very rhythmical that it still fits into the song rhythmically	D43a) Indiv participant says words rhythmical
Line 44	I praise him for remembering so well	D44a) Therapist verbally affirms indiv for remembering the animal
Line 45	I do the same with the next animal being greeted which is Mr. Shark	D45a) Therapist invite participants to sing by themselves
Line 46	Tom softly says "shark" I praise him for remembering the animal and he smiles back at me	D46a) Indiv participant immediately remembers chorus words D46b) participants says words rhythmically D46c) Indiv smiles D46d) Indiv makes meaningful eye contact with therapist

Line 47	I continue with the song by singing the next animals being greeted along with the group cheerfully	D47a) Therapist sings with participants cheerfully
Line 48	The participants make regular eye contact with me but with blunted facial expressions	D48a) Participants make eye contact with therapist D48b) Blunted facial expressions
Line 49	The group members stare at me with blunted facial expressions. They seem unsure of the lyrics as well as the melody. The overall energy in the room is very low despite me engaging energetically and inviting towards them	D49a) blunted facial expressions D49b) Participants unsure of chorus lyrics D49c) Participants unsure of chorus melody D49d) Participants low participation and energy levels D40e) Therapist body language inviting and high energy
Line 50	Christopher occasionally smiles at me and occasionally at Ben to which Ben does not smile back but instead looks away	D50a) Indiv occasionally smiles D50b) Indiv attempts to make meaningful eye contact with other group member
10:26		
Line 51	I continue with the song and sing the verse section	D51a) Repetition of verse
Line 52	I return to the original slower tempo with a combination of strumming and picking on the guitar as accompaniment	D52b) Therapist strums guitar and sings slower
Line 53	Tom sings along very softly. Christopher occasionally sings the emphasized words	D53a) Indiv sings softly with therapist D53b) Indiv remembers emphasized words of verse
Line 54	Fewer words are mumbled and most of the words are sung melodically by Tom	D54a) Less mumbling of words D54b) Indiv remembers melody better
Line 55	The quality of Tom and Christopher's voices are very low in energy and flat. Christopher sings very monotonic	D55a) Two participants tone quality is flat D55b) Two Indiv low energy singing D55c) Indiv monotonic singing
Line 56	Christopher slowly rocks his upper body from one side to the other to the rhythm of the song	D56a) Indiv participant rocks upper body matching the pulse of the music
Line 57	The rest of the participants sit still with their hands in their laps while staring at me and the guitar with blunted facial expressions	D57a) Participants blunted facial expressions D57b) Participants engage with low energy D57c) Low participation levels
11:04		
Line 58	I invite Christopher to help me strum the guitar	D58a) Therapist invite Indiv participant to strum guitar
Line 59	He starts talking about a dinosaur	D59a) Indiv participant talks about unrelated

		subject
Line 60	He waves his arm high up into the air as he repeats the word "dinosaur"	D60a) Indiv participant talk about unrelated subject D60b) Indiv participant makes use of unrelated hand gestures
Line 61	I ask him to stand up and come to me	D61a) Therapist verbally invite Indiv participant to strum guitar
Line 62	He stands up and starts imitation the claws of a dinosaur with his hands	D62a) Indiv participant makes use of unrelated hand gestures
Line 63	I he continues to say the word "dinosaur"	D63a) Indiv participant talk about unrelated subject
Line 64	I verbally acknowledge him and that he is imitating a dinosaur with big claws	D64a) Therapist verbally acknowledges Indiv participants imitation of a dinosaur
Line 65	I lean forward with my guitar and model to him how to strum the guitar strings using my right hands index finger	D65a) Therapist models strumming of guitar
Line 66	He copies my movement with ease and starts to gently strum the guitar for a brief second	D66a) Indiv participant imitate therapist's strumming D66b) Indiv Participant strums guitar gently
Line 67	His strumming changes to lively and fast paced	D67a) Indiv participant strums lively and fast
Line 68	I immediately start to sing the verse of the song and Tom joins in for only a few lines and then stomps singing	D68a) therapist sings lively D68b) Indiv sings lively with therapist D68c) Indiv remembers verse lyrics
Line 69	His strumming has perseverative qualities to it	D69a) Perseverative quality to Indiv strumming
Line 70	Christopher looks around the room and seems excited and smiles widely	D70a) Indiv participant responds with excitement and joy D70b) Participants distracted by objects in the room D70c) Indiv smiles widely
Line 71	Tom and Ben sing softly with me at first but stop singing as they stare attentively at Christopher's big arm movements as he strums the guitar. The rest of the group stares attentively at Christopher's strumming with blunted facial expressions except for Tom who smiles widely for the brief moments he sang with	D71a) Two participants sing softly with therapist D71b) Participants stop singing D71c) Participants focus on Indiv strumming of guitar D71d) Indiv participant strum guitar with big arm movements D71e) Participants blunted facial expressions D71f) Indiv smiles when singing

Line 72	I sing the repeat of the verse alone	D72a) Therapist sings alone D72b) Repetition of verse
Line 73	I invite Ben to strum the guitar next	D73a) Therapist invite Indiv participant to strum
Line 74	He stands up and walks to the guitar	
Line 75	He starts to strum spontaneously and without any need of modeling	D75a) Indiv participant strums guitar spontaneously
Line 76	His strumming has a very clear and rich tone quality to it	D76a) Indiv participants strumming has rich tone quality
Line 77	He strums the same fast paced tempo as Christopher	D77a) Indiv participant strums fast paced
Line 78	He physically strums the strings harder making the dynamics of his playing loud. He attentively starts at his finger as he strum the guitar while smiling	D78a) Indiv participant strums loud and clear D78b) Indiv focus on strumming D78c) Indiv smiles
Line 79	At first the rest of the group does not sing and I sing alone	D79a) Therapist sings alone
Line 80	After greeting the first two animals I verbally invite the group to sing with me	D80a) Therapist verbally invite participants to sing
Line 81	The members giggle softly and Tom starts to sing loud, clear, lively and enthusiastically the rest of the chorus with me. Christopher and Lisa smile widely and Lisa starts to wave	D81a) Participants smile widely D81b) Indiv sings loudly and lively D81c) Indiv remembers chorus words D81d) Indiv physically imitate lyrics of the song by waving
Line 82	I invite Lisa to help me with the strumming next	D82a) Therapist invite Indiv participant to strum guitar
Line 83	Lisa stands up and says the word "dinosaur" and imitates that of claws using both her hands	D83a) Indiv participant talk about unrelated subject D83b) Indiv participant makes use of unrelated hand gestures
Line 84	I verbally acknowledge her and invite her to strum the guitar	D84a) Therapist verbally acknowledge Indiv participants imitation of a dinosaur D84b) Therapist invite Indiv to strum guitar
Line 85	She starts to strum the guitar vigorously, fast paced (much faster than Ben and Christopher's strumming) and loud	D85a) Indiv participant strums guitar with force D85b) Indiv participant strums loud and at a presto tempo

Line 86	She strums the strings using the index finger of her right hand	
Line 87	She strums the strings with a lot of force and enthusiasm	
Line 88	The rest of the group sit up straight from their chairs immediately and look at her strumming attentively	D88a) Participants focus on Indiv participants strumming
Line 89	The participants including Lisa doesn't sing the words with me but are smiling widely, seem excited and some even start to bounce up and down while still seated in their chairs	D89a) Therapist sings alone D89b) Participants focus on Indiv strumming D89c) Participants smile widely D89d) Participant hop in chairs D89e) Participants body language indicate excitement and interest in the music
Line 90	I praise Lisa for her strumming and she goes to sit down	D90a) Therapist verbally affirms indiv participant for strumming the guitar
Line 91	I invite Tom to help my by strumming the guitar	D91a) Therapist invite Indiv participant to strum guitar
Line 92	He stands up and walks to the guitar while I verbally invite the group to sing	D92a) Therapist invite participants to sing
Line 93	At first he gently, slowly and softly strums the guitar using both hands and all five fingers where soon after he suddenly starts to strum the guitar using both hands' index fingers	D93a) Indiv participant strums guitar slowly and gentle D93b) Indiv participant alternates hands during strumming
Line 94	He strums the guitar very fast and lively	D94a) Indiv participant strums guitar fast and lively
Line 95	He eventually starts to use all five his fingers again to strum the guitar	D95a) Indiv participant alternates hands during strumming
Line 96	The tempo of his playing goes faster and faster until the rhythm is scattered and the main pulse is difficult to hear	D96a) Indiv participant fastens tempo D96b) Indiv participant plays scattered rhythm
Line 97	I sang the words of the verse in the same tempo and by matching his playing with my singing	D97a) Therapist matches quality of Indiv strumming using voice
Line 98	The rest of the participants sit and stare and giggle often as Tom continues to play	D98a) Participants respond with giggling D98b) Participants do not sing D98c) Participants smile

Line 99	Every now and again one can hear some of the participants singing a few emphasized words with me however it is difficult to hear who it exactly is	D99a) Different participants remembers emphasized words of verse
Line 100	They seem excited and playful	D100a) Participants respond with excitement and playful
Line 101	They make eye contact with each other and me often	D101a) Participants make eye contact with therapist and each other
Line 102	I thank Tom for helping me with the guitar	D102a) Therapist verbally affirms indiv participant for strumming the guitar
12:53		
Line 103	I immediately continue to the chorus section of the song	D103a) Repetition of chorus
Line 104	I strum the guitar vigorously and play in a very fast pace	D104a) Therapist strums guitar vigorously D104b) Therapist plays fast paced
Line 105	The quality of my voice is playful and loud	D105a) Therapist sings playfully and loud
Line 106	The participants sing with me excitedly they smile and laugh loudly	D106a) Participants laugh and smile widely D106b) Participants sing with excitement
Line 107	They make eye contact with each other and me as they copy each other's movements. The energy in the room is very high	D107a) Participants make meaningful eye contact with therapist and each other D107b) Participants imitating physical movements from each other D107c) High energy participation and singing
Line 108	Christopher and Tshepo of the participants bounce up and down in their chairs	D108a) Two participant hop in their chairs
Line 109	Christopher waves his hands and arms in circular movements	D109a) Indiv participant waves arms
Line 110	Lisa shouts out very loudly and excitedly "dinosaur" as she nods her head up and down to the rhythm of the song	D110a) Indiv participant nods head to pulse of the music D110b) Indiv participant shouts out unrelated word
Line 111	After greeting the first two animals we continue to the next animal where I suddenly pause the music and wait for the participants to say who we greet next	D111a) Repetition of chorus D111b) Therapist pauses music D111c) Therapist invite participants to sing by themselves

Line 112	Christopher shouts out loudly and excitedly "shark"	D112a) Indiv participant spontaneously shouts out incorrect animal name D112b) Indiv forgets order of animals being greeted, shouts out wrong animal
Line 113	Tom corrects him and softly says "jellyfish"	D113a) Indiv participant softly says correct animal name D11b) Indiv remembers chorus lyrics
Line 114	We finish the chorus in a fast and lively tempo	D114a) Therapist and participants sing together fast paced and lively
Line 115	All participants bounce around in their chairs, wave their arms, swing their feet or nod their heads to the rhythm of the song	D115a) Participant wave arms and legs D115b) Participants hop in chairs energetically to the pulse of the music
Line 116	The sing loudly and excitedly	D116a) Participants sing loudly and with excitement
Line 117	The quality of their voice is playful, confident and lively. They seem to remember some of the emphasized words but seem to mumble most of it. They also seem unsure of the melody but still participate by physically moving with the music and making meaningful eye contact with each other and me.	D117a) Participants sing with confidence and in a playful manner D117b) Participants sing with confidence D117c) Participants remembers emphasized words of chorus D117d) Mumbling of words D117e) Participants make meaningful eye contact with therapist and each other D117f) Participants unsure of chorus melody D117g) High energy participation D117h) High energy and fast paced physical movements
13:08		
Line 118	I pause of a few seconds before going back to the verse section of the song	D118a) Therapist creates musical anticipation
Line 119	The participants look at me attentively and stop moving	D119a) Participants make meaningful eye contact with therapist D119b) Participants focus on music
Line 120	I softly and slowly start to sing the first line of the verse	D120a) Therapist sings softly and slowly
Line 121	The strumming of the guitar is a combination of picking and strumming	D121a) Therapist strums guitar softly and slowly
Line 122	The quality of my voice is gentle and calm	D122a) Therapist quality of voice is calm and gentle

Line 123	The participants start to mumble some of the words along with me. They seem more sure of the lyrics and the melody	D123a) Mumbling of words D123b) Participants Remembers emphasized words of verse D123c) participants remember melody
Line 124	I suddenly change the tempo and dynamics of the second line of the verse to fast paced, loud and vigorous strumming and singing	D124a) Therapist's suddenly shift tempo and dynamics to loud and fast tempo D124b) Therapist sings and strums fast and loud
Line 125	The participants immediately start to laugh, clap and wave their hands and swing their legs	D125a) Participants respond with expression of laughter and enjoyment D125b) Participants clap hands, wave arms and swing legs
Line 126	The words are too fast to pronounce all of them so I sing the line alone however the participants make eye contact with me and seems engaged	D126a) Therapist sings alone D126b) Tempo too fast for participants to sing D126c) Participants make meaningful eye contact with therapist
Line 127	I pause after the second line and move to the next	D127a) Therapist pauses music
Line 128	I play this line slow and soft, similar to the first line of the verse earlier	D128a) Therapist sings softly and slowly D128b) Therapist strums guitar softly and slowly D128c) Therapist quality of voice is calm and gentle
Line 129	The participants smile widely and sing softly with me some of the emphasized lyrics	D129a) Participants sing softly with therapist D129b) Participants make meaningful eye contact with therapist D129d) Participants remember emphasized lyrics of verse
Line 130	Some of them nod their heads or swing their legs slowly to the rhythm of the song	D130a) Participants nod their heads and swing legs to the pulse of the music
Line 131	Before singing the very last line of the verse I pause for a few seconds	D131a) Therapist adds musical anticipation
Line 132	Tom continues to sing the song and the rest of the group watches and waits in anticipation for me to start singing and playing again	D132a) Indiv participant ignore musical pause D132b) Indiv participant sings alone D132c) Indiv remembers melody D132d) Indiv remembers verse words

Line 133	I create anticipation and suddenly start to play and sing the last line fast, loud and vigorously	D133a) Therapist suddenly continues with song D134b) Therapist strums and sings loud, fast and vigorously
Line 134	The participants hop in their chairs, laugh, make eye contact with each other and myself and seem very excited	D134a) Participant excitedly hop in chairs D134b) Participants look at therapist in anticipation D134c) Participants make meaningful eye contact with therapist D134d) Participants smile and laugh
Line 135	I continue to the chorus section where I play slowly and calmly	D135a) Therapist sings softly and slowly D135b) Therapist strums guitar softly and slowly D135c) Therapist quality of voice is calm and gentle D135d) Repetition of chorus
Line 136	I keep quiet when the part comes where the animal being greeted must be names	D136a) Therapist adds musical anticipation
Line 137	I look at the group members and wait for the answer	D137a) Therapist makes meaningful eye contact with participants
Line 138	All the members excitedly shout out different animals we had sang about at the same time	D138a) Participants spontaneously shout out animal names in anticipation D138b) High level of participation D138c) Participants forgets order of animals being greeted, shouts out wrong animal names
Line 139	The loudest is Christopher who shouts out "crab"	D139a) Indiv forgets order of animal being greeted, shouts out wrong animal name
Line 140	I correct him by saying "octopus"	D140a) Therapist verbally remind Indiv of lyrics for chorus
Line 141	I speed up the tempo of the second animal we greet which is Mr. Shark	D141a) Therapist fastens tempo
Line 142	Christopher starts to clap his hands in excitement while the rest of the group laughs and repeats the word "shark"	D142a) Indiv participant claps hands D142b) Participants repeats correct lyric after therapist D142c) Participants respond in excitement

Line 143	Tom kicks and swings his legs and laughs loudly	D143a) Indiv participant swings and kick legs energetically D143b) Indiv participant expresses joy through laughter and smiling
Line 144	I ask the group whom we greet next	D144a) Therapist ask participants which animal is greeted next
Line 145	Christopher shouts out "crab" He starts explaining that crabs have claws	D145a) Indiv participant spontaneously shouts out correct answer D145b) Indiv remembers chorus lyrics D145c) Indiv associates lyrics with real life animal
Line 146	I verbally acknowledge him and greet the next animal slowly and calmly, which is Mr. Jellyfish	D146a) Therapist verbally acknowledge Indiv participant explanation of animal D146b) Therapist sings softly and slowly
Line 147	I continue to greet Mr. Crab. Overall the body language of the participants are engaging and indicate a sense of excitement and eagerness to participate	D147a) Participants body language is engaging and indicate eagerness and excitement to participate
Line 148	The group members, especially Tom, sing very loudly and energetically when we greet Mr. Crab	D148a) Participants sing loudly and with high energy D148b) Indiv participant sings louder
Line 149	I immediately fasten the tempo before I continue with the verse of the song without a pause between	D149a) Therapist fastens tempo D149b) Repetition of verse
Line 150	I sing the first line of the song fast and hastily	D150a) Therapist sings fast and hastily
Line 151	The participants pronounce all the words very clear, especially Christopher. They seem to remember the melody correct as well	D151a) Participants immediately remember verse words D151b) Participants sing fast and hastily with therapist D151c) Participants remembers melody
Line 152	The move and swing their arms and legs to the rhythm of the song	D152a) Indiv participant wave their arms and swing their legs fast and with high energy
Line 153	After the first line of the verse I suddenly pause	D153a) Therapist adds musical anticipation

Line 154	During the pause Tom spontaneously start to sing the second line melodically and enthusiastically while the rest of the group attentively look at me in anticipation while smiling widely	D154a) Indiv participant ignore musical pause D154b) Indiv participant remembers verse lyrics and melody D154c) Indiv participant sings with confidence D154d) Participants smile D154e) Participants make meaningful eye contact with therapist D154f) Participants interested and focused on therapist and music
Line 155	I join him and match the tempo and tone quality of his singing on the guitar and vocally	D155a) Therapist matches Indiv participants singing
Line 156	The rest of the group sing along and giggle while looking at each other and me	D156a) Participants sing with therapist and Indiv participant cheerfully D156b) Participants express joy by giggling D156c) Participants make meaningful eye contact with therapist and each other
Line 157	Christopher swings his arms as he bounces in his chair	D157a) Indiv participant swings arms and hops in chair
Line 158	I continue with the next line in a slow and calm pace	D158a) Therapist strums guitar and sings in slow pace and gentle
Line 159	The participants are laughing and making eye contact with each other	D159a) Participants express joy and excitement through laughter D159b) Participants make meaningful eye contact with therapist and each other
Line 160	When I pause at the end of the line, Tom spontaneously starts to sing the last line fast paced, lively and melodically again	D160a) Therapist adds musical anticipation D160b) Indiv participant ignore musical pause D160c) Indiv participant remembers melody D160d) Indiv participant sings with confidence and fast paced D160e) Indiv remembers verse lyrics
Line 161	I match him and the participants hop in their chairs enthusiastically and excitedly while laughing and smiling widely. They look at me and each other	D161a) Therapist match Indiv participants enthusiastically and energetic singing D161b) Participants respond by hopping in their chairs energetically D161c) Participants smile and laugh D161d) Participants make meaningful eye contact

		with each other and the therapist
14:14		
Line 162	I continue with the chorus at a moderately slow pace	D162a) Repetition of chorus D162b) Therapist sings and strums guitar at moderately slow pace
Line 163	The participants sing all the words with me lively and loud. They all look at me attentively while mumbling some of the words however the emphasized words are pronounced the clearest	D163a) Participants sing lively and loud with therapist D163b) Mumbling of words D163c) Participants focus on therapist D163d) Participants remembers emphasized words of chorus D163e) Emphasized words pronounced clearest
Line 164	After greeting the first two animals, I expectantly pause	D164a) Therapist adds musical anticipation
Line 165	A few times I pretend that I am going to start playing but don't. The participants look at me in anticipation, they smile widely	D165a) Therapist extends anticipation D165b) Participants focus on therapist D165c) Participants smile
Line 166	As soon as I start to play again (in a faster pace than the first two lines), I stop singing the part where the animal music be named and wait for the participants to say which animal we are greeting next	D166a) Therapist plays at a fast pace D166b) Therapist invite participants to sing by themselves
Line 167	Tom immediately shouts out "jellyfish" and lifts his arms and wiggles his fingers imitating the tentacles of a jellyfish	D167a) Indiv participant spontaneously shouts out animal name D167b) Indiv participant physically imitate lyrics D167c) Indiv remembers chorus lyrics
Line 168	I continue to the next animal being greeted which is Mr. Crab	
Line 169	The participants emphasize the word "crab" by singing it loudly and in higher pitched voices. They participants remembers most of the words but was very dependent on my first singing the specific animals name before singing with	D169a) Participants change pitch of voices to higher D169b) Participants respond playful and silly D169c) Emphasized words are sung the loudest D169d) Participants unsure of some chorus words D169e) Participants remembers melody D169f) Therapist remind participants of lyrics for chorus

Line 170	I move to the verse	D170a) Repetition of verse
Line 171	At first I sing the first line very softly, slowly and gentle	D171a) Therapist sings softly and gentle
Line 172	I pause for a few seconds to create anticipation before I vigorously strum my guitar and sing loudly and in a fast paced tempo the second line of the verse. The participants look at me attentively and in anticipation	D172a) Therapist adds musical anticipation D172b) Therapist strums and sings vigorously and fast paced D172c) Participants make meaningful eye contact with therapist D172d) Participants adjust to tempo and dynamic shift with ease D172e) Participants focus on therapist and music
Line 173	The participants sing a long loudly, pronouncing all the lyrics of the song very clearly while they bounce in their chairs, swing their arms and legs vigorously in the air and laugh	D173a) Participants sing loudly D173b) Participants immediately remember verse words D173c) Participant excitedly and energetically hop in chairs and wave arms D173d) Participants adjust to tempo and dynamic shift with ease D173e) Participants pronounce all words clearly
Line 174	They make eye contact with each other and me	D174a) Participants make meaningful eye contact with therapist and each other
Line 175	I move to the next line by playing it slowly, calmly and softly to which the participants do not sing with but they remained focused on me and the music	D175a) Therapist sings softly and gentle D175b) Participants focus on therapist and music
Line 176	I pause for a few seconds before singing the very last line of the verse	D176a) Therapist adds musical anticipation
Line 177	I vigorously strum my guitar as I sing the last line of the verse	D178a) Therapist strums and sings vigorously and fast paced
Line 178	Near the end of the line I add a short ritardando to end the song	
Line 179	The participants sing along loudly and vigorously	D180a) Participants sing loud and vigorously D180b) Participants adjust to tempo and dynamic shift with ease
Line 180	They swing their arms and legs excitedly	D181a) Participant swing arms and legs excitedly

Line 181	When the ritardando is added they seem to calm down by placing their hands in their laps or sitting still	D182a) Participant adjust to tempo and dynamic shift with ease
Session notes	At first the song went very slow, especially at the beginning of the song learning process	
	The participants seem to remember the melody and most of the lyrics but seem to struggle to remember what animals are being greeted and the order they are greeted	
	I alternated the tempo and dynamics as well as the overall energy of the song	
	I added a lot of anticipations and sudden pauses throughout the song to provide the participants with multiple experiences of the song	
	This made the song much more socially engaging and for the first time the children seemed excited and spontaneous	
	The bounced and moved around in their chairs	
	Sometimes some had even hopped up from their chairs of excitement	
	Overall the memorization of the words are quite slow in comparison with group A however the experience of singing and learning the song without PCS seem much more important in the context of these participants daily lives	

## Appendix S: Thick descriptions E

E	Under the water	
25-Apr-16	Session 3 with pcs Group A	
Time (minutes into session)	Thick description	Code
8:16		
Line 1	After I place the communication board on the chair next to me	
Line 2	I ask the group if everyone can see the board	E2a) Therapist ask participants a question about PCS board
Line 3	Ian says loudly "yes" and starts to sing the first line of the song melodically, confidently and slowly	E3a) Indiv participant immediately recognize PCS E3b) Indiv participant spontaneously sings song E3c) Indiv participant sings slowly E3c) Indiv remembers melody E3d) Indiv sings with confidence
Line 4	I immediately start to point to the symbols as he continues to sing	E4a) Therapist direct attention to PCS
Line 5	The rest of the participants join in with the singing while I quietly point to the picture symbols	E5a) Participants remember melody E5b) Therapist does not sing E5c) Therapist direct attention to PCS E5d) Participants immediately recognize PCS
Line 6	The participants sit with their arms folded or in their lap as they sing with a monotonic quality of voice. The overall energy of participation is low	E6a) Participants engage with low energy E6b) Participants sing with monotonic tone quality
Line 7	They attentively watch my finger as I point to the symbol as we sing the song with blunted facial expressions	E7a) Participants focus on PCS E7b) Blunted facial expressions

Line 8	All participants pronounce all the words correctly, including those who do not have a symbol (lots and lots)	E8a) Participants immediately remembers words E8b) Participants remember words with absent PCS E8c) Clear pronunciation of words
Line 9	The quality of the groups singing is almost monotonic sounding	E9a) Participants sing with monotonic tone quality
Line 10	When we start singing the repeat of the verse, Tshepo who is sitting right next to the communication board starts to point to the symbols with me spontaneously	E10a) Repetition of verse E10b) Indiv participant spontaneously direct attention to PCS E10c) Therapist direct attention to PCS
Line 11	When we get to the second line of the verse which does not have the symbols for "lots and lots", Tshepo continues to point to the symbol for fish when the group is singing "lot and lots"	E11a) Indiv participant direct attention to incorrect PCS
Line 12	I take his hand gently away from the board and then point to the symbol for fish when we sing it in the song	E12a) Therapist direct attention to correct PCS
Line 13	Tshepo does not continue helping me with pointing to the symbols but continues attentively reading the picture symbols	E13a) Indiv participant stomps pointing to PCS E13b) Indiv join group singing E13c) Indiv and group focus on PCS
Line 14	The participants sing more melodic the second time we repeat the verse however their quality of voice is robotic sounding	E14a) Repetition of verse E14b) Participant sing melodic E14c) Participants sing with a robotic tone quality
Line 15	The quality of their voices is also louder and more melodic	E15a) Participants sing louder E15b) Participants sing melodic
8:42		
Line 16	I continue to the verse by asking the participants how the rest of the song goes	E16a) Repetition of chorus
Line 17	It seems like all the members remember that in the chorus we greet the different animals as they immediately start to sing the chorus section by themselves. The participants attentively watch the and read the PCS as we sing the chorus	E17a) Participant immediately recognize PCS E17b) Therapist direct attention to PCS E17c) Participants focused on PCS

Line 18	As they sing the greetings, I place picture symbols of the animals on the communication board while they sing confidently all the words melodically	E18a) Therapist direct attention to PCS E18b) Participants sing with confidence E18c) Participants remember melody E18d) Participants recognize PCS with ease
Line 19	They seem a bit unsure about which animal gets greeted when and forgot Mr. Jellyfish	E19a) Participants unsure of words E19b) Participants dependent on PCS to remember words
Line 20	As soon as I place the picture symbol on the board they all sing loudly "Jellyfish"	E20a) Participants recognize PCS immediately E20b) Participants dependent on PCS to remember words
Line 21	Overall they seemed unsure about the animals but were able to continue with the song after seeing the picture symbols. They remembers the melody by themselves but the quality of their voices was very flat and their facial expressions very blunt, almost a robotic response	E21a) Participants unsure of words E21b) Participants dependent on PCS to remember words E21c) Blunted facial expressions E21d) Participants remembers melody E21e) Participants sing with a flat quality of voice E21f) Participants sing with a robotic tone quality
9:02		
Line 22	After the chorus section of the song, I continue with the verse section	E22a) Repetition of verse
Line 23	The group members attentively follow my index finger as I point to the picture symbols	E23a) Therapist direct attention to PCS E23b) Participants focus on PCS
Line 24	They seem to recognize the picture symbols by ease now and know the melody of the song very well	E24a) Participants remembers PCS with ease E24b) Participants remember melody well
Line 25	The quality of their voices is very monotonic	E25a) Participants sing with monotonic tone quality
Line 26	It sounds as if they are reading more than singing and they only look at the board with blunted facial expressions	E26a) Speaking of words instead of singing
Line 27	They sing the rhythm of the melody correct	E27a) Participants remember rhythm of song E27b) Bunted facial expressions E27c) Participants focused on PCS

Line 28	I stand up and fetch my guitar	E28a) Therapist fetch guitar
Line 29	Ian offers to help me with playing the guitar	E29a) Indiv participant kindly offer to help therapist
Line 30	I thank him and tell him that there is no need for his help at this point	E30a) Therapist verbally give praise to indiv
9:41		
Line 31	I ask Tshepo to point to the picture symbols as we sing the song and I play guitar	E31a) Therapist invite indiv participant to point to PCS
Line 32	Tshepo leans forward and tries to strum the guitar as I think he did not understand what I was asking of him	E32a) Indiv participant misunderstands therapist invitation to strum guitar
Line 33	Jack who is sitting next to him takes his arm and pulls him to the boards gently while I explain to Tshepo that I will be pointing the guitar alone and that he must point to the picture symbols as we sing the song	E33a) Other indiv participant assist indiv participant by modeling PCS pointing E33b) Therapist invite participant to strum guitar
Line 34	I start to strum the guitar in a moderately fast tempo using a combination of strumming and picking as accompaniment	E34a) Therapist plays guitar with both hands E34b) Therapist plays moderately fast
Line 35	Tshepo looks at the guitar confused	E35a) Indiv participant confused by therapist's instructions
Line 36	I ask him what picture is the first one we sing in the song	E36a) Therapist ask participants a question about song
Line 37	He says "under"	E37a) Indiv participant immediately remembers PCS with ease
Line 38	I ask him to show everyone on the communication boards	E38a) Therapist invite indiv to point PCS
Line 39	He looks at the boards unsure	E39a) Indiv participant unsure of verbal instruction of pointing PCS
Line 40	Jack leans forward and shows Tshepo which picture symbol represents the words "under"	E40a) Other indiv participant assist indiv participant by modeling PCS pointing
Line 41	I start to strum the guitar again as I did before	E41a) Therapist plays guitar with both hands E41b) Therapist plays moderately fast

Line 42	I play a short introduction	
Line 43	When we start to sing the verse of the song all participants sing along cheerfully at a moderately fast tempo	E43a) Repetition of verse E43b) Participants sing cheerfully E43c) Participants sing at moderately fast tempo
Line 44	They attentively follow Ben's finger as he points to the correct picture symbols of the lyrics of the song, Ellen and Jack lean forward to see the board which Tshepo is covering with his body	E44a) Indiv participant direct attention to PCS E44b) Participants focus on PCS E44c) Participants dependent on PCS
Line 45	He seems very focused and fixated on pointing to the correct picture symbol	E45a) Indiv participant direct attention to PCS E45b) Indiv focus on PCS
Line 46	He hops gently in his seat every time he points to the next matching picture symbol	E46a) Indiv participant hops to the pulse of the music E46b) Indiv participant direct attention to PCS
Line 47	He forgets to stop pointing when we sing the lyrics "lots and lots" because there were no picture symbols for those words	E47a) Indiv participant direct attention to incorrect PCS E47b) Indiv forget words with PCS absent
Line 48	He continues and finishes one picture symbol too early for the lyrics	E48a) Indiv participant direct attention to incorrect PCS
Line 49	The second time we sing the verse he immediately points to the first picture symbol that matches the first word of the song which is "under"	E49a) Repetition of verse E49b) Indiv participant direct attention to PCS
Line 50	This time he remembers to stop pointing when we sing "lots and lots"	E50a) Indiv participant direct attention to correct PCS E50b) Indiv participant corrects pointing mistake from previous verse
Line 51	He ends with the correct picture symbol that matches the groups singing	E51a) Indiv participant direct attention to correct PCS
Line 52	The group members attentively follow his index finger as he points to the picture symbols	E52a) Participants focus on PCS

Line 53	Some of them lean forward in their seats to see past him as Tshepo was sitting in front of most of the board. The participants sing along all the words and pronounce the words clearly. They seem confident about the melody and their quality of voice is much livelier.	E53a) Participants focus on PCS E53b) Participants dependent on PCS to remember words E53c) Participants remember PCS with ease E53d) Words are pronounced clearly E53e) Participants remembers melody with ease E53f) Participants quality of singing is livelier
10:26		
Line 54	I pause the music for a few seconds in which I ask Tshepo what comes next and where must he point on the board	E54a) Therapist pause music E54b) Therapist ask indiv participants a question about song and PCS
Line 55	The rest of the group start to sing the chorus	E55a) Participants spontaneously sing by themselves E55b) Participants recognize PCS by themselves
Line 56	Tshepo does not point to the board at first and I have to point and show him where to point	E56a) Therapist assist indiv participant by modeling pointing to PCS
Line 57	He immediately copies me	E57a) Indiv participant direct attention to PCS E57b) Indiv participant imitates therapist by directing attention to PCS
Line 58	I continue to play the guitar while Tshepo points to the communication board	E58a) Therapist plays guitar with both hands E58b) Indiv directs attention to PCS
Line 59	As he points to the correct animals as well as the symbol for the word "hello" every time, he taps the pictures with his index finger matching the rhythm of the main pulse of the guitar strumming	E59a) Indiv directs attention to appropriate PCS E59b) Indiv respond to music by rhythmically tapping of finger on PCS
Line 60	Ian gets very excited and starts to sing much louder and confidently than the rest of the group. He also imitate the animals being greeted by making gestures using his hands	E60a) Indiv participant sings with excitement E60b) Indiv sings loud and with confidence
Line 61	He moves around on his seat and waves his arms around	E61a) Participants body posture indicate excitement and eagerness to participate E61b) Indiv waves arms

Line 62	The rest of the group sit in their chairs very still and sing loudly but attentively looks at the board and the picture symbols with their arms folded or on their laps with blunted facial expressions	E62a) Participants sing loudly E62b) Participants focus on PCS E62c) Participants dependent on PCS to remember words E62d) Blunted facial expressions
Line 63	After we finish the chorus section, I verbally queue the group and specifically Tshepo that we are going to sing the verse again which is the same as the beginning of the song	E63a) Repetition of verse
Line 64	Tshepo points to the picture symbols of the verse without hesitation	E64a) Indiv participant spontaneously direct attention to PCS
Line 65	Ian starts to sing even louder, less melodic, like he is shouting every word. He seems very excited and knows the melody very well	E65a) Indiv participant sing with excitement E65b) Indiv shouts lyrics loudly
Line 66	He waves his arms from side to side and lifts it up in the air and wiggles his fingers and continues with the waving of arms that is matching to the rhythm of the music	E66a) Indiv participant make hand big gestures E66b) Indiv body language indicates excitement and eagerness to participate E66c) Indiv sings and moved with high energy
Line 67	Tshepo points to the correct picture symbols both the times we sang the verse. The participants sang with low energy and the quality of their voices is very flat	E67a) Indiv direct attention to PCS E67b) Participants sings with low energy E67c) Participants quality of singing is flat
Line 68	I praise the group for their efforts and contributions	E68a) Therapist verbally give praise
11:06		
Line 69	I thank Tshepo and tell him that he no longer has to point to the picture symbols	E69a) Therapist verbally give praise
Line 70	I tell the group that we are going to sing the song again	E70a) Repetition of verse E70b) Repetition of chorus
Line 71	I start to play a short introduction to the song	
Line 72	I use a combination of strumming and picking at a moderately fast tempo	E72a) Therapist plays guitar with both hands E72b) Therapist strums the guitar moderately fast
Line 73	The quality of my playing is lively	E73a) Therapist strums the guitar lively

Line 74	I count to 4 before we start to sing the song	
Line 75	The group sings loudly and enthusiastically, especially Ian who sing with high energy	E75a) Participants sing loud and with enthusiasm E75b) Individ sings louder E75c) Individ participates with high energy
Line 76	Ian and Tshepo both start to hop in their chairs to the rhythm of the music	E76a) Two participants hop in chairs E76b) Two indiv respond with high energy movements
Line 77	They wave and swing their arms to the rhythm of the music as well	E77a) Two indiv respond with high energy movements
Line 78	Tshepo is the only participant to read the picture symbols on the communication board	E78a) Individ focus on PCS E78b) Individ dependent on PCS to remember words
Line 79	The rest of the group makes eye contact with me and gradually start to move their upper bodies to the rhythm of the music. The rest of the group seem to remember the lyrics without the use of the board	E79a) Participants respond with high energy movements E79b) Participants make meaningful eye contact with therapist and each other E79c) Participants remember lyrics from memory
Line 80	For the first time the members smile as they sing the song and move and hop in their chairs to the beat of the music	E80a) Participants facial expression indicate emotions of excitement and joy E80b) Participants smile E80c) Participants hop in chairs to pulse of music
Line 81	The quality of their voices matches the guitar playing and my voice which is lively and energetic	E81a) Participants sing loudly and energetic
Line 82	When we get to the chorus section, I change the dynamics of my playing and singing to soft but keep the same moderately fast tempo as well as the lively quality of playing and singing	E82a) Repetition of chorus E82b) Therapist shifts music to softer but still at moderately fast tempo
Line 83	The members sing softer as well	E83a) Participants musically adjust tempo and dynamics of singing E83b) Participants sing softly
Line 84	When we get to the second animal being greeted, I change the dynamics of my playing and singing to loud and strong	E84a) Therapist shifts music to loud and forceful

Line 85	The group members sing along loudly and excitedly	E85a) Participants musically adjust tempo and dynamics of singing E85b) Participants sing loudly and excitedly
Line 86	The third animal we greet I change the dynamics of my playing and singing to soft and gently again but keep the moderately fast tempo	E86a) Therapist shifts music to softer but still at a moderately fast paced tempo
Line 87	The group members sing softly with me as they attentively watch me in with curious facial expressions	E87a) Participants musically adjust tempo and dynamics of singing E87b) Participants sing softly E87c) Participants have curious facial expressions
Line 88	We greet the last animal	
Line 89	We all sing loud and enthusiastically and lively together while making a healthy amount of eye contact with each other and myself	E89a) Musical shift to lively and loud E89b) Participants musically adjust E89c) Participants and therapist sing loud and lively together E89d) Participants make meaningful eye contact with therapist and each other
Line 90	Some of the members shout out "Mr. Crab" in a high pitched and playful voice	E90a) Indiv participants change pitch of voices to higher E90b) Indiv participants sing playful and silly
Line 91	Jack imitated the claws of a crab using his middle and index fingers as we greet Mr. Crab	E91a) Indiv participant imitate movement of a crab
Line 92	We continue to the verse section	E92a) Repetition of verse
Line 93	Ian is still singing the loudest of all the members in a high-pitched voice	E93a) Indiv participant sings in high pitched voice E93b) Indiv sings loudest
Line 94	The rest of the group members sing along enthusiastically and energetically while smiling	E94a) Participants sing with enthusiasm and high energy E94b) Participants smile
Line 95	Tshepo start to match Ian's singing by also singing louder and in a higher pitched voice	E95a) Other Indiv participant match other indiv singing in high pitched voice
Line 96	They rock their upper bodies from one side to the next matching the plucking and strumming rhythm of the guitar accompaniment	E96a) Participants rock upper bodies matching the pulse of the music
Line 97	I praise the participants for their singing	E97a) Therapist verbally give praise
12:05		

Line 98	I ask the participants if they sang the song using the board or if they remembered the words by themselves	E98a) Therapist ask participants a question about PCS
Line 99	Jack answers that he used the board however he was watching me the entire time and not the board	
Line 100	Ian agrees with Jack however he was also watching me and Tshepo and not the board throughout the song	
Line 101	I invite Albert to come to the board so he can point to the picture symbols while I strum the guitar	E101a) Therapist invite indiv participant to point PCS
Line 102	He friendly agrees	E102a) Indiv eager to point to PCS
Line 103	I ask Tshepo and Albert to swop seats	
Line 104	I play a short introduction and count to 4	
Line 105	We start to sing the verse	E105a) Repetition of verse
Line 106	All the members start to sing enthusiastically and energetically	E106a) Participants sing with enthusiasm and high energy
Line 107	Ian and Tshepo sing in a very high and dissonant pitched voice	E107a) Two participants sing with high pitched voices E107b) Participants response indicate emotions of joy and silliness
Line 108	They sing enthusiastically and lively	E108a) Two participants sing lively and with enthusiasm
Line 109	The rest of the group sing along cheerfully and hop in their chair to the rhythm of the music but Tshepo and Ian's singing overpower their voices	E109a) Two participants singing overpowers others singing E109b) Participants sing cheerfully E109c) Participants hop in chairs
Line 110	Jack tells Tshepo to keep quiet by touching his arm for his attention and placing his index finger on his own lip and making the sound "shh" as to indicate to him to keep quiet or to sing softer	E110a) Indiv participant verbally ask indiv participant to sing softer
Line 111	After he does this twice I tell Jack that it is okay for Tshepo to sing like that	E111a) Therapist verbally acknowledge indiv wishes E111b) Therapist non-verbally allows two participants to continue singing with high pitched voices

Line 112	Albert points to the correct picture symbol as we sing the song	E112a) Indiv direct attention to PCS
Line 113	He attentively and rhythmically and very well focused points to every picture symbol as we sing it	E113a) Indiv direct attention to PCS E113b) Indiv focus on PCS pointing
Line 114	When we finish singing the chorus section he sits back in his chair and I have to remind him that the sing is not yet finished	E114a) Pointing indiv does not go back to verse section E114b) Therapist verbally invite indiv to point to PCS E114c) Pointing indiv dependent on therapist directing attention to PCS
Line 115	We continue to sing the song	
Line 116	He points to the correct symbols and remembers to go back to the symbol for the word "hello" as it is repeated every time we greet an animal	E116a) Indiv direct attention to PCS
Line 117	Ian sings even more louder and enthusiastically and spontaneous	E117a) Indiv sings louder and playful E117b) Indiv sings spontaneous and with high energy
Line 118	He cups his hands together as if they were a speaker and sing loudly through it	E118a) Indiv cups hands in front of mouth E118b) Indiv sings louder with cupped hands
Line 119	Tshepo excitedly hops in his chair to rhythm of the music	E119a) Indiv hops in chair with high energy
Line 120	We sing the chorus in a moderately fast paced tempo with a moderately fast strumming as guitar accompaniment	E120a) Repetition of chorus E120b) Moderately fast paced strumming and singing
Line 121	As we go back to the verse section, I have to remind Albert that the song is not yet finished because he sat back in the chair again	E121a) Repetition of verse E121b) Indiv does not go back to verse section E121c) Therapist verbally invite indiv to point PCS
Line 122	I slow down the tempo and go back to the combination of picking and strumming on the guitar as accompaniment	E122a) Therapist shifts music to a moderately slow pace E122b) Guitar accompaniment changes
Line 123	Ian still sings in a high pitched voice	E123a) Indiv continues singing with high pitched voice
Line 124	Jack starts to tap the floor with his feet to the rhythm of the song for half a line but then stomps again	E125a) Indiv taps feet to the beat of the music

Line 125	He cups his hands like a speaker, imitating what Ian is still doing from the chorus section	E125a) Individ copies other individ cupping of hands singing
Line 126	Albert points to the correct picture symbols attentively	E126a) Individ direct attention to PCS E126b) Individ focus on pointing PCS
Line 127	All participants are making a healthy amount of eye contact with me except for Albert who is looking at the board while he points to the symbols. The participants sing loudly and with high energy. The smile and adjust to the musical shifts with ease	E127a) Participants make meaningful eye contact with therapist and each other E127b) Individ pointing to PCS make no eye contact with others E127c) Individ focus on pointing PCS E127d) Participants musically adjust E127f) Participants smile E127g) participants sing loudly and with high energy
14:04		
Line 128	After praising the group for their signing, I invite them verbally to sing the song again but this time Albert will not be pointing to the symbols	E128a) Therapist invite participants to sing
Line 129	I explain to them that if they want to, they can look at the board and at the symbols but that nobody will be pointing to the picture symbols as we sing the lyrics	E129a) Therapist invites participants to read PCS by themselves
Line 130	I start to strum and pick the guitar as a short introduction	E130a) Therapist strums guitar with both hands
Line 131	The tempo is moderately fast and has a playful and lively quality to it	E131a) Therapist strums guitar moderately fast and lively
Line 132	I count to 4	
Line 133	We start to sing the song the song	E133a) Therapist and participants sing together
Line 134	All the participants look at me attentively	E134a) Participants make meaningful eye contact with therapist E134b) Participants focus on therapist
Line 135	Most of them copy my body movement of rocking from side to side to the rhythm of the picking on the guitar, which is on the main pulse of the beat	E135a) Participants imitate physical body movement of therapist

Line 136	Tshepo start to sing in a high pitched voice and much louder than the rest of the group but the rest of the groups singing is still lively and loud	E136a) Indiv singing with high pitched voice E136b) Indiv facial expression indicate emotions of joy and silliness E136c) Participants sing loudly and lively
Line 137	Jack and Ian cup their hands as speakers and sing through it	E137a) Two participants cup hands in front of mouths
Line 138	The quality of the groups singing is energetic, lively, playful and more spontaneous behavior is present. The group members occasionally look at the board but seem to sing most of the words by memory	E138a) Participants singing is spontaneous, lively and energetic E138b) Remember lyrics from memory
Line 139	All members are moving their bodies in some way	E139a) Participants move bodies to the beat of music
Line 140	Some rock from one side to the other while some hop in their chairs up and down	E140a) Participants body posture indicate excitement and eagerness to participate
Line 141	In the chorus section I take turns by singing the first line and animal being greeted softly but still at the same tempo than the verse and the next line and animal being greeted loud	E141a) Repetition of chorus E141b) Therapist alternates dynamics from soft to loud during verse lines
Line 142	The group members adjust the dynamics and quality of singing with ease according to mine	E142a) Participants musically adjust tempo and dynamics of singing with ease
Line 143	When we greet an animal loudly, Ian, still cupping his hands in front of his mouth like a speaker, sings very loud	E143a) Indiv participants cup hands in front of mouth E143b) Indiv sings louder
Line 144	When we go back to the verse section I change my strumming to a combination of strumming and picking again	E144a) Repetition of verse E144b) Guitar accompaniment shift to calm and gentle
Line 145	I keep the same moderately fast tempo but change the dynamics of my singing and playing too much softer and gentle	E145a) Therapist shifts dynamics from loud to soft and gentle
Line 146	The group adjusts their singing	E146a) Participants musically adjust tempo and dynamics of singing with ease
Line 147	The song ends at a moderately fast and cheerful tempo with a ritardando at the end	E147a) Therapist plays and sings cheerfully E147b) Music is moderately fast E147c) Song ends with gradual ritardando

Line 148	I praise the participants for their singing	E148a) Therapist verbally affirm
Session notes	The members seem to remember the song very well	
	They remembered the words more so they were less dependent of the communication board	
	They made a lot more eye contact with me	
	There seem to be a few moments where the participants were more awareness of each other, such as Jack copying Ian's movement by also cupping his hands in front of his mouth like a speakerphone	
	I was also able to have the participants assist me by pointing to the picture symbols on the communication board	
	I was able to adjust the tempo and the dynamics of the song	
	I added a few anticipations but felt limited when using the board	
	I did not always feel too spontaneous as I did in with the group without the communication board	
	The participants were however able to adjust their singing in terms of tempo and dynamics with ease	

Appendix T: Thick descriptions F

F	Under the water	
25-Apr-16	Session 3 without pcs Group B (Ben was absent)	
Time (minutes into session)	Thick description	Code
7:46		
Line 1	I ask the participants if they remember the song	
Line 2	I play a slow and gentle introduction on the guitar using a combination of strumming and picking	F2a) Therapist plays slow and gentle
Line 3	Tom raises his hand and enthusiastically says "fish"	F3a) Indiv remembers word from chorus F3b) indiv responds with enthusiasm
Line 4	I respond by also saying "fish" approvingly	F4a) Therapist verbally confirms indiv correct answer of animal
Line 5	I start to sing the verse in a moderately slow and calm pace	F5a) Therapist sings slowly and calmly paced
Line 6	All participants start to sing along at a slow tempo however they pronounce all the words clearly and sing melodically	F6a) Participants sing slowly F6b) Participants pronounce lyrics clearly F6c) Participants remembers verse melody and lyrics with ease
Line 7	Tom's voice is the most notable as he sings the loudest and with confidence	F7a) Indiv sings the loudest F7b) Indiv sings with confidence
Line 8	Christopher waves his arms to the rhythm of the first line of the verse where after he imitates that of a fish swimming with his hands	F8a) Indiv swings arms energetically F8b) Indiv imitate movement of animal in song
Line 9	Tshepo excitedly stands up for a short moment and sit down again while singing enthusiastically	F9a) Indiv excitedly stands up briefly F9b) Indiv sings with enthusiasm

Line 10	The participants pronounce all the words clearly and properly. Their overall participation is high in energy and they all seem very focused at the music and me	F10a) Participants pronounce words clearly F10b) Participants participate with high energy F10c) Participants focus on therapist and the music
Line 11	The quality of their voices is melodic, lively and energetic. The participants often make eye contact with me and each other while smiling	F11a) Participants singing is lively energetic and melodic F11b) Participants make eye contact with therapist and each other F11c) Participants smile
Line 12	When we get to the chorus Tom and Christopher remembers all the animals we are greeting in the correct order. Christopher waves his arms in the air cheerfully as he and Tom smile widely at me	F12a) Two indiv remembers chorus lyrics with ease F12b) Indiv waves arms cheerfully F12c) Two participants smile widely F12d) Indiv make meaningful eye contact with therapist
Line 13	Lisa seems unsure about the animal we greet next when its Mr. Jellyfish's turn and shouts out the word "shell" a few times as she pretends to hold a shell in her hand and tries to show it to me by placing her hand in the air in front of me	F13a) Indiv unsure of chorus lyrics F13b) Indiv enthusiastically shouts out related word to the theme
Line 14	I slow down the tempo slightly and start the first line of the chorus section softer gradually growing louder and kept the tempo and dynamics the same for the rest of the chorus section	F14a) Therapist slows down music F14b) Therapist adjust dynamics gradually from soft to loud
Line 15	The guitar accompaniment changes as well to strumming the main pulse in double time	F15a) Therapist's guitar strumming changes to double time
Line 16	The participants sing along enthusiastically and energetically. They make meaningful eye contact with me and each other	F16a) Participants sing with high energy and enthusiasm F16b) Participants make meaningful eye contact with therapist and each other
Line 17	They emphasize the animals being greeted by shouting loudly and excitedly out the names of the animals when we sing it in the song	F17a) Participants shout emphasized words excitedly F17b) Participants remembers chorus lyrics and melody with ease
Line 18	Occasionally all participants would jump up from their seats of excitement and then sit down again	F18a) Participants jump up from chairs in excitement

Line 19	The wave their arms and swing their legs in a fast pace as they smile widely and playfully	F19a) participants swing legs and arms energetically F19b) Participants smile widely F19c) Participants engage playfully
Line 20	As soon as we return to the verse I change the guitar accompaniment to a gentle, slow and soft combination of picking and strumming	F20a) Repetition of verse F20b) Therapist shift music to gentle and slow
Line 21	I adjust my singing as well to the guitar accompaniment	F21a) Therapist sings slowly and gentle
Line 22	I rock my upper body from one side to the other to the rhythm of music	F22a) Therapist rocks upper body matching the pulse of the music
Line 23	The participants sing along eagerly	F23a) Participants eager to participate
Line 24	Lisa and Christopher sing softer and gentler but Tom sings loud and overpowers the other participants singing almost	F24a) Two indiv adjust to tempo and dynamic shift with ease F24b) Indiv sings loudly and overpowering
Line 25	Christopher waves his arms from one side to the other matching the rhythm of the music	F25a) Indiv waves arms matching the pulse of the music
Line 26	The group makes a healthy amount of eye contact with me during the first time we sing the song in this session. The overall level of participation is very high and the members are very focused on the activity	F26a) participants make meaningful eye contact with therapist and each other F26b) High energy participation F26c) Participants focused on music and therapist
8:45		
Line 27	I continue to the chorus section again	F27a) Repetition of chorus
Line 28	I unexpectedly change the tempo and dynamics of my singing and playing to a fast pace and more lively quality	F28a) Therapist suddenly shift music to fast and lively tempo and loud dynamics
Line 29	My strumming on the guitar is much more vigorous	F29a) Therapist strums guitar vigorously
Line 30	The participants do not sing along however they laugh loudly, smile widely and look at what the others in the group are doing	F30a) Participants laugh and smile widely F30b) Participants make meaningful eye contact with each other

Line 31	All the participants hop in their seats as they vigorously swing their legs in a fast pace to the rhythm of the song	F31a) Participants hop excitedly and energetically in their chairs F31b) Participants swing legs vigorously matching the pulse of the song
Line 32	The swing their arms in a vigorous and fast pace, matching the tempo of the music as well	F32a) Participants wave arms vigorously matching the pulse of the music
Line 33	The participants seem to imitate each other's physical movements	F33a) Participants imitate vigorous body movements from each other
Line 34	After greeting the first two animals I unexpectedly pause	F34a) Therapist adds musically anticipation
Line 35	I look at each participant creating a sense of anticipation	F35a) Therapist makes meaningful eye contact with participants
Line 36	All the participants stop swinging their arms and legs and looks back at me in anticipation to see what will happen next	F36a) Participants focused on therapist and music F36b) Participants physically stop movement in anticipation of music
Line 37	Before I continue with the song, Tom spontaneously starts to sing the song loudly and with confidence	F37a) Indiv remembers chorus lyrics F37b) Indiv sings loudly and with confidence
Line 38	I join in immediately with the same tempo and dynamics I used for the first two lines	F38a) Therapist singing and playing matches indiv singing
Line 39	The participants start laughing out loud; swing their legs and arms of excitement	F39a) Participants laugh and smile widely F39b) Participants wave arms and swings legs excitedly
Line 40	Their physical movements match the tempo and energy of the music which is lively and cheerful	F40a) Participants physical movements matches lively and cheerful characteristics of music
Line 41	All participants make a healthy amount of eye contact with each other and myself as the chorus section continues	F41a) Participants make meaningful eye contact with therapist and each other
Line 42	When we get to the end of the chorus section, I suddenly pause the music again and look at all the participants thus creating anticipation to what will happen next in the song	F42a) Therapist adds musical anticipation F42b) Therapist makes meaningful eye contact with participants F42c) Therapist interacts playfully
8:58		

Line 43	After a short pause I start to sing the verse softly and gentle	F43a) Therapist's singing is soft and gentle F43b) Repetition of verse
Line 44	I change the strumming to a combination of picking and strumming	
Line 45	I rock my upper body from one side to the other, matching the main pulse and the picking of the guitar accompaniment	F45a) Therapist rocks upper body matching slow tempo of the music
Line 46	The participants start to sing along immediately in a slow and gently pace	F46a) Participants sing slowly and gentle F46b) Participants adjust to tempo and dynamic shift with ease
Line 47	They look at me attentively	F47a) Participants focus on therapist and music
Line 48	Christopher imitates my rocking movement by rocking his head from one side to the other for a short moment	F48a) Indiv imitates therapist rocking movement with nodding of head
Line 49	He lifts his arms up and down to the rhythm of the music	F49a) Indiv moves arms matching the pulse of the music
Line 50	Tom sings the loudest however Lisa and Christopher gradually sing louder and louder thus matching Tom's singing. They sing energetically and melodically. They pronounce the words clearly and playfully while making meaningful eye contact with each other and me. All the participants smile widely	F50a) Indiv sings loudest F50b) Two indiv gradually sing louder F50c) Participants remembers verse lyrics and melody F50d) Participants sing energetically and melodically F50e) participants pronounce words clearly F50f) Participants make meaningful eye contact with therapist and with each other F50g) Participants smile widely
Line 51	After singing the first two lines of the verse, I unexpectedly change my strumming and singing to a fast and vigorous tempo	F51a) Therapist suddenly shifts music to a fast and vigorous tempo
Line 52	Tom sings with me but even faster	F52a) Indiv sings faster than the intended tempo
Line 53	Lisa and Christopher laugh out loud instead of singing as they stare at Tom	F53a) Two indiv laugh loudly at other indiv F53b) Two participants make meaningful eye contact with indiv

Line 54	Christopher swings his arms and legs vigorously and fast paced thus matching the tempo of the music	F54a) Indiv swings legs vigorously and fast matching the pulse of the music
Line 55	The second time we repeat the verse, I do the exact same as the previous verse in terms of the tempo, dynamics and strumming	F55a) Repetition of verse F55b) Therapist alternates music between fast paced and vigorous strumming and singing to slow paced and calm strumming
Line 56	The participants adjust their singing and body movement to a slow and gently pace	F56a) Participants adjust to tempo and dynamic shift with ease F56b) Participants sing slowly and gentle F56c) Participants swing legs and wave arms slowly matching the pulse of the music
Line 57	When I pause before singing the last two lines of the verse, Tom starts spontaneously singing the first line vigorously and fast paced	F57a) Therapist adds musical anticipation F57b) Indiv sings spontaneously ahead of group F57c) Indiv sings loudly, energetic and vigorously
Line 58	The group and myself join him immediately	F58a) Therapist and participants match indiv fast paced and vigorous singing F58b) Participants adjust to tempo and dynamic shift with ease
Line 59	The tempo is fast paced and the group members laugh and swing their legs and arms vigorously matching the tempo of the music	F59a) Participants laugh and smile widely F59b) Participants swing limbs with high energy matching the pulse of the music
Line 60	They make eye contact with each other and me often	F60) Participants make meaningful eye contact with therapist and each other
Line 61	I unexpectedly end the last line of the verse by adding a slow ritardando	F61a) Therapist adds ritardando to end verse
Line 62	I sing softer and gentler	F62a) Therapist sings softly and gentle
Line 63	The participants sing calmly	F63a) Participants adjust to tempo and dynamic shift with ease
Line 64	He shouts out the last word, which is "me" loudly and playfully	F64a) Indi shouts out emphasized word loudly and playfully
9:18		

Line 65	I unexpectedly move to the chorus section of the song	F65a) Repetition of chorus F65b) Therapist continues music unexpectedly
Line 66	I strum vigorously in a fast tempo and sing loud matching the strumming on the guitar	F66a) Therapist strums and sings fast paced and vigorously
Line 67	I sing the entire chorus through keeping the same tempo and dynamics I started it with. I make meaningful eye contact with the group members and they respond by making eye contact with me	F67a) Therapist's music remains fast paced and vigorous F67b) Therapist makes meaningful eye contact with participants F67c) Participants make meaningful eye contact with therapist
Line 68	The participants' laughs loudly, some imitate me by pretending to play the guitar	F68a) Participants smile and laugh loudly F68b) Participants imitate therapist by pretending to play guitar
Line 69	They swing their legs vigorously, matching the music	F69a) Participants swing legs with high energy matching the pulse of the music
Line 70	They make eye contact with each other and myself often and their overall focus is on the music and me. Their overall body language indicates eagerness to participate and excitement	F70a) Participants make meaningful eye contact with therapist and each other F70b) Participants focus on therapist and music F70c) Participants body language indicate eagerness and excitement to participate
Line 71	I pause the guitar strumming and my singing unexpectedly when finishing the chorus section	F71a) Therapist adds musical anticipation
Line 72	I started to sing the verse section	F72a) Repetition of verse
Line 73	I change the guitar accompaniment to a combination of strumming and picking	F73a) Therapist's guitar accompaniment changes
Line 74	I sing and play slower, softer and gentler	F74a) Therapist sings and plays soft, slower and gentle
Line 75	I rock my upper body from one side to the other matching the main pulse of the guitar picking	F75a) Therapist rocks upper body matching the pulse of the music
Line 76	The participants sing along lively and enthusiastically. They know the words very well and sing it with confidence	F76a) Participants sing lively and with enthusiasm F76b) Participants remember verse melody and lyrics with ease

Line 77	Lisa and Christopher swing their arms matching the rhythm of the music	F77a) Two indiv swing arms matching the pulse of the music
Line 78	When we get to the second line of the verse, I unexpectedly change the tempo and dynamics of the music to fast paced and livelier	F78a) Therapist shifts music to fast paced and lively
Line 79	The participants sing along loudly and laugh in between the singing	F79a) Participants adjust to tempo and dynamic shift with ease F79b) Participants laugh loudly
Line 80	They swing their feet and arms vigorously and matching to the music	F80a) Participants energetically and vigorously swing legs matching the pulse of the music
Line 81	When we start with the repeat of the verse, I change the tempo and dynamics of the song to slower and gentler	F81a) Repetition of verse F81b) Therapist shifts music to slow and gentle
Line 82	The participants sing along lively and loud	F82a) Participants do not adjust with music F82b) Participants sing lively and loudly
Line 83	Before we get to the second section of the verse, Tom spontaneously and fast paced continue to sing the next line of the verse	F83a) Indiv energetically sing ahead of participants and therapist F83b) Indiv remembers verse lyrics F83c) Indiv sings energetically and spontaneously
Line 84	I pause and look at Tom	F84a) Therapist makes meaningful eye contact with indiv
Line 85	He stomps singing and looks at me in anticipation to what will happen next	F85a) Indiv focus on therapist in anticipation F85b) Indiv makes meaningful eye contact with therapist
Line 86	I unexpectedly start to strum the guitar vigorously at a fast tempo	F86a) Therapist suddenly plays with high energy and fast paced
Line 87	The participants laugh very loudly, swing and kick their legs and wave their arms	F87a) Participants laugh loudly F87b) Participants swing legs and wave arms energetically

Line 88	They make eye contact with each other and myself	F88a) Participants make meaningful eye contact with therapist and each other
9:55		
Line 89	I continue to the chorus section	F89a) Repetition of chorus
Line 90	I strum and sing slowly and lazily the greeting of the first animal	F90a) Therapist strums lazy and slowly
Line 91	Each word is emphasized and pronounced very clearly by all the members	F91a) Participants remembers chorus melody and lyrics with ease F91b) Participants pronounce words clearly
Line 92	Tom sings ahead a few times	F92a) Indiv sings ahead of therapist and participants
Line 93	I pause the music for a few seconds when Tom starts singing the next line spontaneously and in a very fast pace	F93a) Therapist adds musical anticipation F93b) Indiv sings ahead spontaneously and fast paced
Line 94	I immediately join him, and so do the rest of the participants	F94a) Therapist and participants sing fast paced and energetically F94b) Participants adjust to tempo and dynamic shift with ease
Line 95	The second animal being greeted is very fast paced and energetically, loud and vigorous strumming and singing	F95a) Therapist's music is fast paced and vigorously sung and strum
Line 96	The participants swing their arms and legs and laugh very loud	F96a) Participants sing loudly and energetically 96b) Participants swing arms and legs energetically
Line 97	The third animal we greet is in a slow and lazy pace to which the members adjust their singing with ease	F97a) Therapist shifts music to a slow and lazy pace F97b) Participants adjust to tempo and dynamic shift with ease F97c) Participants sing slowly and lazy
Line 98	The animal that should be greeted is Mr. Jellyfish	

Line 99	Lisa shouts out very loudly "shark" with confidence while smiles at me	F99a) Indiv sing incorrect animal name with confidence F99b) Indiv smiles F99c) Indiv makes meaningful eye contact with therapist
Line 100	I continue with the song by greeting the fourth animal in a fast and vigorous tempo	F100a) Therapist strums and sings fast and vigorously
Line 101	The participants swing their arms and legs vigorously as they loudly sing and shouts out "crab"	F101a) Participants swing arms and legs energetically F101b) Participants sing loudly F101c) Participants remember emphasized words of chorus
10:10:00		
Line 102	After a short pause I start to sing the verse softly and gentle	F102a) Therapist shifts music to slow and gentle F102b) Repetition of verse
Line 103	I change the strumming to a combination of picking and strumming	F103a) Therapist's guitar accompaniment changes
Line 104	I rock my upper body from one side to the other, matching the main pulse and the picking of the guitar accompaniment	F104a) Therapist rocks upper body matching the pulse of the music
Line 105	The participants start to sing along immediately. They remember the lyrics with ease	F105a) Participants immediately remembers verse melody and lyrics with ease
Line 106	They look at me attentively while smiling widely. They seem curious and excited by the music	F106a) Participants focus on therapist and music F106b) Participants make eye contact with therapist F106c) Participants participate with excitement F106d) Participants smile
Line 107	After singing the first line of the verse, I unexpectedly change my strumming and singing to a fast and vigorous tempo	F107a) Therapist suddenly shifts music to fast and vigorous
Line 108	The participants laugh out loud	F108a) Participants respond in excitement and laughter

Line 109	They all swing their arms and legs vigorously in a fast pace thus matching the tempo of the music	F109a) Participants swing arms and legs fast and energetically F109b) Participants swing arms and legs matching the pulse of the music
Line 110	The second time we repeat the verse, I do the exact same as the previous verse in terms of the tempo, dynamics and strumming	F110a) Repetition of verse F110b) Therapist's expectantly alternate between fast and slow tempo
Line 111	The participants adjust their singing and body movement to a slow and gently pace	F111a) Participants adjust to tempo and dynamic shift with ease
Line 112	When I pause before singing the last two lines of the verse, Tom starts spontaneously singing the first line vigorously and fast paced	F112a) Indiv sings unexpectedly and spontaneously F112b) Indiv sings energetically and fast paced
Line 113	I pause for a short time and Tom stomps singing and look at me in anticipation. He smiles widely at me	F113a) Indiv smiles F113b) Indiv makes meaningful eye contact with therapist F113c) Therapist adds musical anticipation
Line 114	I unexpectedly continue with the song	F114a) Therapist suddenly continues the song
Line 115	The tempo is fast paced and the group members laugh and swing their legs and arms vigorously matching the tempo of the music	F115a) Therapist plays fast and energetically F115b) Participants respond with excitement and laughter F115c) Participants swings arms and legs energetically and vigorously F115d) Participants swing arms and legs matching the pulse of the music
Line 116	They make eye contact with each other and myself often while smiling widely	F116a) Participants make meaningful eye contact with therapist and each other F116b) Participants smile
10:35		
Line 117	Before moving to the chorus section again	F117a) Repetition of chorus
Line 118	I lower my voice to almost whispering	F118a) Therapist speaks whisper-like
Line 119	I ask the group what we sing after the verse section	F119a) Therapist asks participants what we sing after the verse section

Line 120	The all look at me with excitement and anticipation	F120a) Participants focus on therapist F120b) Participants seem excited F120c) Participants make meaningful eye contact with therapist F120d) Participants body language and facial expressions indicate anticipation and curiosity
Line 121	I start to sing the greeting of the first animal	
Line 122	The participants make eye contact with me while smiling	F122a) Participants make eye contact with therapist F122b) Participants smile
Line 123	I sing slowly and pronounce and emphasize every word of the line clearly	F123a) Therapist sings slowly F123b) Therapist emphasize lyrics F123c) Therapist pronounces lyrics clearly
Line 124	The participants look at me attentively and in anticipation	F124a) Participants make meaningful eye contact with therapist F124b) Participants focus on therapist in anticipation
Line 125	I pause for a short while and unexpectedly sing the greeting of the second animal in a fast and lively tempo	F125a) Therapist adds musical anticipation F125b) Therapist unexpectedly sings at a fast and lively tempo
Line 126	The group start to sing loudly with me, they swing their legs and arms vigorously and in a fast pace, matching the tempo and energy of the music	F126a) Participants adjust to tempo and dynamic shift with ease F126b) Participants swing arms and legs energetically matching the pulse of the music F126c) Participants engage with high energy and excitement
Line 127	They shout out the animal's name we are greeting which was Mr. Shark loudly and energetically while smiling widely	F127a) Participants remembers chorus melody and lyrics with ease F127b) Participants smile widely F127c) Participants sing loudly and energetically
Line 128	I pause again	F128a) therapist adds musical anticipation
Line 129	I start to sing the greeting of the third animal	
Line 130	The participants make eye contact with me as they stare at me in anticipation and with curiosity	F130a) Participants make meaningful eye contact with therapist F130b) Participants focus on therapist with curiosity and anticipation

Line 131	I sing slowly and pronounce and emphasize every word of the line clearly	F131a) Therapist sings slow F131b) Therapist pronounces lyrics clearly F131c) therapist emphasize lyrics
Line 132	The participants look at me attentively and in anticipation while smiling widely	F132a) Participants make meaningful eye contact with therapist F132b) Participants focus on therapist with curiosity and anticipation F132c) Participants smile
Line 133	As we sing the animal being greeted name, which was Mr. Jellyfish, Tom specifically, shouts out the animals name in a forced and low pitched voice, almost similar to growling	F133a) Indiv shouts lyrics in a low pitched voice F133b) Indiv sings with force and very loud F133c) Indiv remembers chorus melody and lyrics with ease
Line 134	I pause for a short while and unexpectedly sing the greeting of the fourth animal in a fast and lively tempo	F134a) Therapist adds musical anticipation F134b) Therapist sings and strums at a fast pace and vigorously F134c) Therapist unexpectedly starts to sing
Line 135	The participants swing their arms and legs energetically and excitedly	F135a) Participants swing their arms and legs energetically and excitedly
Line 136	Luca playfully imitates my movement by pretending to play a guitar	F136a) Indiv copies therapist's playing of the guitar with physical imitation F136b) Indiv engages playfully
10:53		
Line 137	I return to the verse	F137a) Repetition of verse
Line 138	I slow down the tempo and adjust the guitar accompaniment to a combination of strumming and picking	F138a) Therapist plays slow and calmly
Line 139	I rock from one side to the other matching the pulse of the music	F139a) Therapist rocks upper body matching the pulse of the music
Line 140	The participants sing along lively and enthusiastically while smiling widely at me	F140a) Participants sing lively and enthusiastically F140b) Participants smile F140c) Participants make meaningful eye contact with therapist

Line 141	As we get to the second line of the verse, Tom starts to sing faster, I immediately speed up the tempo of my playing and singing but not too fast or vigorous as Tom's singing	F141a) Indiv sings ahead of group F141b) Therapist adjust to tempo and dynamic shift with ease F141c) Indiv sings fast paced and loudly with high energy F141d) Therapist sings and strums guitar fast paced and energetically
Line 142	The rest of the group musically adjust to the tempo with ease while smiling widely and swinging their arms matching the pulse of the music	F142a) Participants adjust to tempo and dynamic shift with ease F142b) Participants smile widely F142c) Participants swings arms and legs energetically to the pulse of the music
Line 143	The second time we sing the verse, I slow down the tempo and adjust the guitar accompaniment to a combination of strumming and picking again	F143a) Therapist plays slowly and lively
Line 144	The participants sing along lively while smiling at me. The members are able to adjust the tempo and quality of their singing to slow and lively with ease	F144a) Participants sing slow and lively F144b) Participants adjust to tempo and dynamic shift with ease F144c) Participants smile F144d) Participants make meaningful eye contact with therapist
11:11		
Line 145	I continue to the chorus section	F145a) Repetition of chorus
Line 146	I keep the tempo of the chorus more or less the same as the verse however I strum more lively and stronger	F146a) Therapist sings and strums guitar lively and strong
Line 147	I slow down the tempo and strum gentler when we greet the third animal, which is Mr. Jellyfish and return to the lively, and moderately fast paced tempos when we greet the fourth animal	F147a) Therapist unexpectedly shifts music to slow and gentle paced tempo F147b) Therapist unexpectedly shifts music to lively and moderately fast paced
Line 148	The participants seem to remember all the animals being greeted, including Mr. Jellyfish as well as the order we are greeting them	F148a) Participants remember chorus lyrics and melody with ease
Line 149	The sing along all the lyrics	F149a) Participants remembers chorus lyrics with ease
Line 150	They pronounce all the words clearly	F150a) Participants pronounce words clearly

Line 151	The quality of their voices is lively and energetic	F151a) Participants quality of voices are lively and energetic
Line 152	They sing with a lot of confidence and seem excited by the anticipation of not knowing when the music is going to change. They make eye contact with me and each other as they swing their arms and legs energetically	F152a) Participants sing with confidence F152b) Participants respond with excitement and curiosity F152c) Participants make meaningful eye contact with therapist and each other F152d) Participants swing arms and legs energetically
Line 153	I return to the verse	F153a) Repetition of verse
Line 154	I slow down the tempo and adjust the guitar accompaniment to a combination of strumming and picking	F154a) Therapist plays at a slow paced tempo
Line 155	I rock from one side to the other matching the pulse of the music	F155a) Therapist rock upper body matching the pulse of the music
Line 156	The participants sing along lively, loudly and enthusiastically	F156a) Participants sing lively, loud and with enthusiasm
Line 157	As we get to the second line of the verse I immediately speed up the tempo of my playing and singing to a more energetic and vigorous quality	F157a) Therapist plays energetic and fast paced F157b) Therapist suddenly shifts music to a vigorous and energetic character
Line 158	The rest of the group sings along while making eye contact with each other and myself. They adjust their singing with ease	F158a) Participants adjust to tempo and dynamic shift with ease F158b) Participants sing energetic and vigorously F158c) Participants make meaningful eye contact with therapist
Line 159	They swing their arms and legs as they sing and laugh loudly	F159a) Participants respond with laughter F159b) Participants swing arms and legs energetically matching the pulse of the music F159c) Participants sing loudly
Line 160	The second time we sing the verse, I slow down the tempo and adjust the guitar accompaniment to a combination of strumming and picking again	F160a) Therapist sings slowly F160b) Therapist suddenly shifts music to a slow paced tempo

Line 161	The participants sing along lively and confidently. They adjust the tempo of their singing to a slower pace with ease	F161a) Participants adjust to tempo and dynamic shift with ease F161b) Participants sings lively and with confidence
Line 162	The very first line of the verse I fasten the tempo, strum the guitar more vigorously and sing louder	F162a) Therapist suddenly shifts music to fast and energetically paced tempo F162b) Therapist sings loudly and strums guitar with force
Line 163	The participants swing their legs and arms, laugh and sing loudly and excitedly	F163a) Participants respond with loud laughter F163b) Participants sing loudly and excitedly F163c) Participants swings arms and legs energetically
Line 164	I extend the last chord as well as the word "me" to which the participants joins in by hopping and swinging their limbs vigorously and excitedly	F164a) Therapist and participants exaggerates final chord by extending the word playfully F164b) Participants hop in their chairs energetically and with excitement
Line 165	They sing loudly and enthusiastically with me	F165a) Participants sing over exaggerated last word loudly and with enthusiasm
Line 166	I end the music by strumming a strong final chord loudly	F166a) Therapist strums a strong final chord to end the song
Session notes	The song learning went very well in this session	
	The participants remembered the lyrics and melody very well	
	Tom spontaneously offered tempo and dynamics changes to the song by singing faster and louder	
	I adjusted my singing and playing to match his quality of singing	
	All the participants seem to have a lot of fun	
	They laughed, hopped in their chairs and sang with confidence, high energy and excitement	
	The song learning process felt much easier	
	There were a lot of space and time to musically extend the song and thus provided a wider variety of experiences of the song and interacting within a group context to each participant	

	Overall the song learning in this session was playful, exciting, socially engaging and enjoyable for the participants and myself
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## Appendix U: Thick descriptions G

G	At the circus	
26-Apr-16	Session 1 without pcs Group A	
Time (minutes into session)	Thick description	Code
6:55		
Line 1	I explain to the participants that we are singing a new song	
Line 2	Jack asks "what about the board?" He appears to be bit upset that we won't be using the board	G2a) Indiv observes absence of Pcs G2b) Upset at absence of PCS
Line 3	I explain to him that we will be learning the song without using a board	G3a) Therapist verbally acknowledge indiv concern of absent PCS board
Line 4	He keeps quiet and looks at me with a frown	G4a) Indiv makes meaningful eye contact with therapist G4b) Indiv seems upset at absence of PCS
Line 5	I explain to them that it is very similar to the previous song	
Line 6	I start to pick the guitar in a slow and calm pace	G6a) Therapist picks guitar strings slowly and softly
Line 7	I start to sing the song gently and slowly, I make sure to pronounce the lyrics very clearly and correct	G7a) Therapist sings softly and gentle G7b) Therapist pronounce lyrics clearly
Line 8	Some of the participants try to sing along by mumbling the words and trying to predict the lyrics as I sing it. They seem to remember the melody very well from the previous song. All participants look at me attentively with blunted facial expressions	G8a) Participants seem eager to learn lyrics G8b) Mumbling of words G8c) Blunted facial expressions G8d) Participants focus on therapist and music

Line 9	The lyrics that are the same as in the previous song such as "lots and lots" some of the participants sing clearer	G9a) Participants immediately remember lyrics similar to previous song
Line 10	Some mumble as they are unsure what the words of the song are but seem to remember the melody of the song very well	G10a) Mumbling of words G10b) Participants remember melody from previous song G10c) Participants unsure of verse lyrics
Line 11	I sing the verse for a second time, this time the members sing along but still mumbling for most part of the song	G11a) Repetition of verse G11b) Mumbling of words
Line 12	Ian cups his hands in front of his mouth and sings the last line of the song very clear and loud	G12a) Individ respond to music by physically cupping hands in front of mouth and singing
Line 13	After I finish the first repeat of the verse I ask the participants what the song is about	G13a) Therapist ask participants ask what the song is about
Line 14	Ian answers by saying" this song is about the circus animals"	G14a) Individ gives correct intended meaning of the songs theme
Line 15	I praise him for his correct answer	G15a) Therapist verbally affirms indiv for remembering the songs theme
Line 16	I explain to the participants that the song is about going to the circus	G16a) Therapist verbally explain theme of song
Line 17	Albert shouts out "like Madagascar", referring to the animated children's movie	G17a) Individ associate theme of song with a film
Line 18	I start to strum the guitar gently again	G18a) Therapist strums guitar gently G18b) Repetition of verse
Line 19	I verbally invite the participants to sing the verse with me again	G19a) Therapist invite participants to sing
Line 20	I count to four and we all start to sing together at a moderately slow tempo	G20a) The music is moderately slow

Line 21	At some parts of the verse some of the members seem uncertain about the words but they mumble along during those parts. All the participants sing along. They're facial expressions are blunted and their singing and level of engagement is low in energy	G21a) Unsure of verse words H21b) Mumbling of lyrics H21c) Blunted facial expressions H21d) Low energy singing and engagement
Line 22	Ian sings with his hands cupped in front of his mouth	G22a) Indiv respond to music by physically cupping hands in front of mouth and sing
Line 23	His voice is the most noticeable from all the participants singing as this makes is his voice louder. The quality of his singing is playful and energetic	G23a) Indiv sings the loudest G23b) Indiv singing is playful and energetic
8:25		
Line 24	I pause for a moment and verbally invite the participants to greet the circus animals with me	G24a) therapist verbally invite participants to sing
Line 25	I tell them that the first animal we are greeting is Mr. Elephant	G25a) Therapist verbally tell participants lyrics of chorus
Line 26	I start to sing hello to Mr. Elephant	G26a) Therapist sings line
Line 27	The group sings along much louder and with more enthusiasm than the verse. They seem to remember the melody from the previous session very well	H27a) Participants sing loudly and with confidence H27b) Participants remember melody from previous song
Line 28	I verbally say that the next animal we are greeting is Mr. Horse	G28a) Therapist verbally tell participants lyrics of chorus
Line 29	The participants sing along the greeting of Mr. Horse loudly and with a lot of confidence. All the participants attentively look at me with blunted facial expressions except Ian. Albert hops in his chair briefly	G29a) Participants and therapist sing loudly and with confidence together G29b) Participants focus on therapist and music G29c) Blunted facial expressions H29d) Indiv hops in chair briefly

Line 30	After we finish the phrase, Ian imitates the sound of a horse verbally while he flops his hands and head, imitating the movement of a horse. He smiles widely and looks at the participants. He also sings with his hands cupped in front of his mouth	G30a) Individ imitate movement of animal H30b) Individ imitate vocal sound of animal H30c) Individ smiles widely H30d) Individ sings with hands cupped in front of mouth H30e) Individ participated with high energy and playfulness H30f) Individ makes eye contact with participants
Line 31	I verbally say that the next animal we will be greeting is Mr. Grizzly bear	G31a) Therapist verbally speak lyrics for chorus
Line 32	We sing hello to Mr. Grizzly bear with low energy and mumbling of lyrics. Albert rocks his body from one side to the other with small actions. Ian imitates the sound and movement of a growling bear. The participants seem to remember the melody and the words very well however they stare at me with blunted facial expressions and sing very low in energy and the quality of their voices is very flat except for Ian who sings with high energy and smiles widely	G32a) Participants sing with low energy G32b) Participants quality of singing is flat G32c) Mumbling of lyrics G32d) indiv rocks upper body G32e) Individ imitate movement and vocal sound of animal G32f) Participants remembers chorus lyrics and melody with ease G32g) Participants blunted facial expressions G32h) Individ smiles widely G32i) Individ sings with high energy
Line 33	The group seems interested in the music and occasionally make eye contact with me	G33a) participants make eye contact with therapist G33b) Participants focus on therapist
Line 34	At the end of the phrase Ian roars like bear and lifts his hands and pretends they are bear claws loudly and playfully	G34a) Individ imitates physical movement and vocal sound of animal G34b) Individ physical and vocal imitation is playful
Line 35	I lower my voice to introduce the last animal we will be greeting	G35a) Therapist lowers voice
Line 36	The group members look at me curiously	G36a) Therapist creates anticipation G36b) Participants focused and interested in therapist
Line 37	I explain that the last animal is Mr. Snake	G37a) Therapist verbally speak lyrics for chorus
Line 38	I put emphasis on the "s" sound of Mr. Snake by making a hissing sound as I say the word "snake"	G38a) Therapist emphasize vocal "S" sound

Line 39	As we sing hello to Mr. Snake the participant's imitate the hissing sound when they say the word "snake"	G39a) Participants imitate vocal sound of therapist
Line 40	Ian doesn't sing the words; instead he hisses like a snake and imitates a snake slithering around with his right arm throughout the verse in a playful and energetic manner. Ian immediately starts to sing the first two lines of the verse by himself with his hands cupped before his mouth	G40a) Individ imitates physical movement and vocal sound of animal G40b) Individ participates with high energy and playfulness G40c) Individ sings with hands cupped in front of mouth G40d) Individ remembers song form G40e) Individ remembers chorus melody and lyrics
9:11		
Line 41	I verbally invite the members to greet the animals again with me	G41a) Repetition of chorus G41b) Therapist verbally invite participants to sing
Line 42	I verbally ask them who we greet first	G42a) Therapist ask participants which animal is greeted next
Line 43	Jack immediately answers that we are greeting Mr. Elephant. He smiles proudly for a brief moment	G43a) Individ immediately remembers chorus lyrics G43b) Individ smiles proudly for brief moment
Line 44	I praise him for remembering	G44a) Therapist verbally affirms participant for remembering the animal
Line 45	We sing hello to Mr. Elephant	
Line 46	The participants sing along with confidence, as they know the melody and lyrics very well. They sing with blunted facial expressions	G46a) Participants sing with confidence G46b) Blunted facial expressions G46c) Participants remembers chorus lyrics and melody with ease
Line 47	Ian sings with his hands cupped in front of his mouth, which makes his voice louder	G47a) Individ cups hands in front of mouth G47b) Individ sings louder
Line 48	He also imitated the trumpeting sound an elephant would make at the end of the phrase loudly and energetically. Ian participates in a very playful manner	G48a) Individ imitate vocal sound of animal with high energy and playfulness

Line 49	I continue with the song by asking who we greet next	G49a) Therapist ask participants which animal is greeted next
Line 50	I don't not stop playing guitar and the group answers by singing the correct line with the correct melody with blunted facial expressions	G50a) Participants remembers chorus lyrics G50c) Participants remember melody G50d) Blunted facial expressions
Line 51	I wait a short moment and continue to greet Mr. Horse	
Line 52	The participants sing along with flat quality of voices and mumbling of words except for Ian	G52a) Participants sing with flat quality of voices G52b) Mumbling of words
Line 53	Ian sings the loudest and high energy, still cupping his hands in front of his mouth	G53a) Indiv cups hands in front of mouth G53b) Indiv sings louder and energetically
Line 54	I continue to the next animal being greeted without asking who we greet next	
Line 55	The next animal being greeted is Mr. Grizzly bear	
Line 56	The participants sing along louder and seem to predict Mr. Grizzly bear with ease. Albert and Ina hops in their chairs to the rhythm of the music	G56b) Participants sing loudly G56c) Two indiv hop in their chairs to the pulse of the music
Line 57	We greet the last animal which is Mr. Snake	
Line 58	All participants sing along loudly, energetic and enthusiastically and predicts the lyrics with ease. They all look at me attentively and with blunted facial expressions except for Ian who smiles and still sings with his hands cupped in front of his mouth	G58a) Participants sing loudly and more energetically G58b) Participants make eye contact with therapist G58c) Blunted facial expressions G58d) Indiv smiles G58f) Indiv sings with cupped hands in front of mouth
9:35		
Line 59	I move directly into the verse section	G59a) Repetition of verse
Line 60	I change the guitar accompaniment from strumming in double time to a calm combination of picking and strumming	G60a) Guitar accompaniment shift to slower and calmer
Line 61	The participants sing along with low energy and blunted facial expressions	G61a) Participants sing with low energy G61b) Participants blunted facial expressions

Line 62	They seem to remember all the lyrics very well as well as the melody however they tend to sing monotonic	G62a) Participants remember verse melody G62b) Participants remember verse lyrics with ease G62c) Participants monotonic singing
Line 63	They sing louder when we sing words such as "lots and lots" that are similar to the previous song	G63a) Participants remember lyrics from previous song
Line 64	Ian's voice is heard the loudest and clearest because he is singing with his hands cupped in front of his mouth. He sings more energetically as he moves his upper body in a rocking movement matching the pulse of the music	G64a) Individ cups hands in front of mouth G64b) Individ sings louder and playfully G64c) Individ participates with high energy G64d) Individ rocks upper body matching the pulse of the music
Line 65	We repeat the verse for a second time	G65a) Repetition of verse
Line 66	All participants sing along with blunted facial expressions while attentively staring at me and my guitar	G66a) Participants focus on therapist and music
10:17		
Line 67	I praise the group for learning the words so well	G67a) Therapist verbally affirms participants for remembering the song
Line 68	I verbally invite them to sing the song with me for a last time	G68a) Therapist verbally invite participants to sing
Line 69	I start to strum and pick the guitar for the verse section	G69a) Therapist plays introduction G69b) Repetition of verse
Line 70	I fasten the tempo and play and sing with a lot more energy and enthusiasm as I did before	G70a) Therapist fastens tempo and plays with enthusiasm and high energy
Line 71	The participants start to sing along, Albert hops in his chair for a short while, the rest of the participants sit still on their chairs and look at the guitar and me with blunted facial expressions and low energy	G71a) Participants blunted facial expressions G71b) Participants participate with low energy G71c) Individ participant hops in chair energetically G71d) Participants make eye contact with therapist
Line 72	The participants pronounce the words clearly. They sing loudly and seem to remember the melody and lyrics with ease	G72a) participants sing loudly G72b) Participants remember verse melody and lyrics with ease G72c) Clear pronunciation of words

Line 73	When we get to the chorus section	G73a) Repetition of chorus
Line 74	I ask the participants whom we greet first	G74a) Therapist ask participants which animal is greeted next
Line 75	Jack starts to sing softly "hello Mr. Elephant" with a blunted facial expressions	G75a) Indiv softly sings verse G75b) Indiv blunted facial expression
Line 76	The group and I join him and we all greet Mr. Elephant cheerfully	G76a) Therapist and participants cheerfully sing answer together
Line 77	I continue with the song	
Line 78	All participants sing along loudly as we greet Mr. Horse. They remember the order of the animals being greeted with ease. Their singing is low in energy and they stare at me with blunted facial expressions while occasionally making eye contact with me	G78a) Participants sing loudly G78b) Participants remember chorus lyrics and melody with ease G78c) Low energy singing G78d) Blunted facial expressions G78e) Participants occasionally make eye contact with therapist
Line 79	At the end of the phrase Ian imitates the sound of a horse as he wiggles his fingers in front of his mouth energetically and excitedly	G79a) Indiv respond to music by physically wiggling fingers G79b) Indiv associate lyrics to real life animal sounds G79c) Indiv responds with excitement and high energy participation
Line 80	I continue to the next animal	
Line 81	Ian sings with his hands cupped in front of his mouth thus singing louder and with a playful tone quality	G81a) Indiv cups hands in front of mouth G81b) Indiv sings loudly and playfully
Line 82	Halfway through the phrase Ian starts to roar like a bear as we greet Mr. Grizzly bear energetically and loud. He imitates the animal sounds with his hands cupped in front of his mouth	G82a) Indiv imitates animal vocal sound loudly and energetically G82b) Indiv cups hands in front of mouth
Line 83	We continue to greet the last animal which is Mr. Snake	

Line 84	The participants put an emphasis on the "s" sound and playfully make hissing sounds when we greet Mr. Snake. Ian continues to sing with his hands cupped in front of his mouth and singing loudly and playfully. The rest of the group stare at me with blunted facial expressions however they sing loudly and pronounce all the lyrics clearly	G84a) Participants emphasize "s" vocal sound of animal in song G84b) Participants blunted facial expressions G84c) Participants remembers chorus melody and lyrics very well G84d) Participants pronounce lyrics clearly G84e) Indiv cups hands in front of mouth G84f) Indiv sings loudly and playfully
Line 85	I continue to the verse	G85a) Repetition of verse
Line 86	All participants sing along loudly and with confidence	G86a) Participants sing loudly and with confidence
Line 87	They sing with blunted facial expressions and stare at me attentively	G87a) Participants blunted facial expressions H87b) Participants focus on therapist and music
Line 88	Ian's voice is the loudest of them all because he is singing with both his hands cupped in front of his mouth. His voice is playful and melody. It seems as if he might be smiling behind his cupped hands. He often makes eye contact with me and the other group members	G88) Indiv cup hands in front of mouth G88b) Indiv sings loudest G88c) Indiv sings playfully and melodic G88d) Indiv makes eye contact with indiv participants and therapist
Line 89	Ellen gives a big stretch during the second repeat of the verse and Jack rocks his upper body gently from one side to the other for a short while	G89a) Repetition of verse G90a) Participants rock upper body gently
Line 90	After we end the song, Jack asks when we are using the communication board again	G90a) Indiv observes absence of Pcs
Line 91	I explain to him that we are not going to use the communication board for this song	G91a) Therapist verbally explain absence of pcs
Line 92	He seems upset as he says to me "I want to use the board"	G92a) Indiv insists on presence of pcs G92b) Indiv upset at absence of pcs
Line 93	I acknowledge him and continue with the goodbye song	G93a) Therapist verbally acknowledge indiv upset emotions

Session notes	Overall there had to be a lot of repetition of the phrases and lyrics of the song
	The participants knew the melody and structure of the song already which made the song learning process easier to an extent
	Jack seemed upset at the beginning and end of the session that we were not making use of the communication board as in the previous sessions with the previous song
	The rest of the participants seem to adjust well without the use of a communication board, in fact some did not even seem to notice there was no communication board being used
	Overall I think the song was learned with ease without using any form of visual aid

Appendix V: Thick descriptions H

H	At the circus	
26-Apr-16	Session 1 with pcs Group B	
Time (minutes into session)	Thick description	Code
5:45		
Line 1	I take out the communication board and place it in an upright standing position on my lap	
Line 2	I point to the first symbol representing the word "here"	H2a) Therapist directs attention to PCS
Line 3	I ask the participants what that symbol means	H3a) Therapist ask participants a question about PCS
Line 4	Lisa puts up her hand and say "my turn"	H4a) Indiv participant eagerly volunteers to answer
Line 5	She then asks me to turn the board to her so she can see better	H5a) indiv interested in PCS
Line 6	She gives an answer but I am unable to hear it clearly in the video footage	H6a) Unclear speech
Line 7	I turn to the rest of the participants and give them the answer	H7a) Therapist gives intended meaning of PCS
Line 8	Lisa stands up and points to the picture symbol for the word "here"	H8a) Indiv spontaneously direct attention to PCS
Line 9	She says, "it's here"	H9a) Indiv recognize PCS and direct attention to PCS
Line 10	She points to the next picture symbol along with me as I say the next symbol which is the symbol for the word "circus"	H10a) Indiv direct attention to PCS H10b) Therapist verbally says intended PCS meaning H10b) Therapist direct attention to PCS

Line 11	Lisa responds by saying "it's circus" as she points with me to the picture symbol of the word "circus"	H11a) Indiv recognize PCS with ease H11b) Iconicity of PCS seems higher
Line 12	I continue to the next symbol and as Lisa and I point together I say the words "so much "	H12a) Therapist and indiv direct attention to PCS
Line 13	Lisa repeats the word "much" as she points to the symbol for the word "much"	H13a) Indiv direct attention to PCS H13b) Indiv recognize PCS with ease
Line 14	I point to the next symbol without saying the word the picture symbol represents	H14a) Therapist direct attention to PCS
Line 15	Lisa is the only participant who answers, "see" which is the correct words for the next picture symbol and the Group participants stare at board with blunted facial expressions	H15a) Indiv recognize PCS with ease H15b) blunted facial expressions H15c) Iconicity of PCS seems higher
Line 16	Lisa is still standing and pointing to the picture symbols along with me	H16a) Indiv and therapist direct attention to PCS
Line 17	I verbally continue with the verse of the song by saying the words there are no picture symbols for which are the words "lots and lots"	
Line 18	I point to the next picture symbol without verbally saying the word	H18a) Therapist direct attention to PCS
Line 19	Christopher is the only one to answer by saying "animals" which is the correct word for the picture symbol I am pointing to	H19a) Indiv recognize PCS with ease H19b) Iconicity of PCS seems higher
Line 20	I point to the next picture symbol	H20a) Therapist direct attention to PCS
Line 21	Low energy singing and engagement	H21a) Indiv verbally identify intended PCS meaning H21b) Iconicity of PCS seems higher H21c) Indiv recognize PCS with ease H21d) Participants singing is low in energy and engagement
Line 22	I repeat the word "waiting" in approval that she was correct	H22a) Therapist nonverbally confirm indiv answer by repeating the word

Line 23	I continue to the next and last picture symbol of the verse to which Lisa says loudly and confidently " me " as she points to herself, similar to that of the picture symbol of a child pointing to him/herself	H23a) Therapist direct attention to PCS H23b) Indiv imitate PCS by pointing to herself H23c) Indiv recognize PCS with ease H23d) Iconicity of PCS seems higher
Line 24	She sits down after I repeat the word "me" in agreement	
6:19		
Line 25	I explain to the group that we are now going to sing the verse part we just learned	H25a) Repetition of verse
Line 26	I start to sing the verse	
Line 27	As I sing in a slow and calm manner, I point to each picture symbol as I sing it	H27a) Therapist sing slow and calmly H27b) Therapist direct attention to PCS
Line 28	None of the participants sing along	H28a) Participants don't sing
Line 29	I look at the board as I point to the symbols and occasionally look up and make eye contact with the group members when it is the parts of the verse that has no picture symbols for the words	H29a) Therapist direct attention to PCS H19b) Therapist occasionally make eye contact with participants
Line 30	I sing the verse one alone	H30a) Therapist sings alone
Line 31	Thereafter I verbally invite the participants to sing along with me	H31a) Therapist verbally invite participants to sing
Line 32	I ask them if they are ready to start	
Line 33	They all shout out loud "yes/yay" and lift their fists in the air excitedly, Lisa smiles widely	H33a) Participants respond with excitement and eagerness to participate H33b) Participants verbally respond by shouting yes/yay energetically H33c) Indiv smiles widely
Line 34	I count to 4	
Line 35	Before we can start Tom stands up and fetches a tissue	
Line 36	After he returns I verbally invite the participants to sing along with me again	H36a) Therapist verbally invite participants to sing
Line 37	I count to 4 and we start to sing	

Line 38	The participants sing very softly and with low energy. They seem very unsure of the words	H38a) Participants sing softly H38b) Participants unsure of words H38c) Participants quality of singing is low in energy
Line 39	The quality of their voice is very monotonic and almost impossible to hear. They also seem distracted and swing their legs vigorously	H39a) Participants sing with monotonic tone quality H39b) participants sing unclear and softly H39c) Participants seem distracted
Line 40	This continues for the first repeat of the verse	H40a) Repetition of verse
Line 41	I slow down the second time we sing the song and point to the picture symbols more prominently as we sing it	H41a) Therapist slows down music H41b) Therapist direct attention to PCS
Line 42	I make more eye contact with the participants however they focus mostly on the board	H42a) Therapist makes meaningful eye contact with participants H42b) Participants Focus on PCS
Line 43	The participants swing their legs and stare at the board and my finger pointing to the picture symbols as we sing	H43a) Participants focus on PCS H43b) Participants swing legs
Line 44	The second time we sing the verse I slow the tempo down even more	H44a) Repetition of verse H44b) Therapist slows down the tempo
Line 45	The participants still sing softly, mumbles the words but when we get to the "lots and lots" part where there are no symbols Tom* starts to sing very loudly and energetic	H45a) Mumbling of words H45b) Participants sing softly H45c) Indiv participant immediately remember words of previous song H45d) Indiv participant sings with loud and energetic
Line 46	The rest of the participants join in and they all sing the last line with the correct words more clearly and enthusiastically. Overall the participants remember the melody of the song with ease	H46a) Participants sing louder and faster matching indiv participants singing H46b) Participants recognize PCS faster H46c) Participants remembers melody with ease
Line 47	I praise them for their efforts	H47a) Therapist verbally give praise
7:17		
Line 48	I continue to the chorus section	H48a) Repetition of chorus
Line 49	I start by introducing the first animal we are greeting by sticking the picture symbol on the first podium	H49a) Therapist directs attention to PCS

Line 50	The participants recognize the animal with ease and shout out altogether "elephant"	H50a) Participants immediately recognize PCS H50c) Iconicity of PCS seems higher
Line 51	The animal we greet I introduce by sticking the picture symbol on the second podium	H51a) Therapist directs attention to PCS
Line 52	The group members shout together "horse"	H52a) H50a) Participants immediately recognize PCS H52b) Participants shouts intended PCS meaning H52c) Iconicity of PCS seems higher
Line 53	I place the next animal on the third podium	H53a) Therapist directs attention to PCS
Line 54	The group keeps quiet for a few seconds as they all look at the picture symbol	H54a) Participants focus on PCS
Line 55	One of the group members say softly "grizzly"	H55a) Indiv recognize PCS H55b) Iconicity of PCS seems higher
Line 56	I praise the participants and say it is Mr. Grizzly bear that we are greeting next	H56a) Therapist verbally give praise to indiv H56b) Therapist verbally give intended PCS meaning
Line 57	The last animal that we greet is Mr. Snake	
Line 58	As I stick the picture symbol on the fourth podium, Lisa makes a hissing sound before she says snake	H58a) Therapist directs attention to PCS H58b) Indiv imitate vocal sound of animal being greeted H58c) Indiv immediately recognize PCS H58d) Iconicity of PCS seems higher
7:46		
Line 59	I verbally invite the group to sing the song from the very beginning with me	H59a) Therapist verbally invite participants sing
Line 60	I count to four and start to song the first line with enthusiasm at moderately slow paced tempo	H60a) Therapist sings with enthusiasm H60b) therapist sings and plays at a moderately slow pace
Line 61	We start with the first repeat of the verse	H561a) Repetition of verse
Line 62	The group sing softly and seem unsure of the words	H62a) Participants unsure of words H62b) Participants sing softly

Line 63	When we get to " lots and lots", Tom starts to sing very loud and pronounces the words correctly for the rest of the verse	H63a) Indiv participant immediately remember words with absent PCS H63b) Indiv participant sings with loud and with force H63c) Indiv remembers previous songs words
Line 64	All members attentively watch my finger as I point to the picture symbols as we sing	H64a) Participants focus on PCS
Line 65	I also watch the board to ensure I that I am pointing to the correct picture symbols but do occasionally look up and try to make eye contact with the participants however they stare robotically at the board	H65a) Therapist focus on PCS H65b) Therapist attempts to make eye contact with participants H65c) Participants engage in robotic manner H65d) Blunted facial expressions
Line 66	When we sing the repeat of the verse the group sing softly and mumble most of the words	H66a) Repetition of verse H66b) mumbling of words H66c) participants sing softly
Line 67	The quality of their voices was low in energy, monotonic and they seem unsure of the words	H67a) Participants sing with monotonic tone quality H67b) Participants unsure of words H67c) Participants quality of singing is low in energy
Line 68	I continue to the chorus section	H68a) Repetition of chorus
Line 69	I keep the tempo moderately slow as in the verse	H69a) Therapist sings and plays at a moderately slow pace
Line 70	When we greet the different animals the Tom starts to sing loudly again with a lot of energy and starts to swing his legs	H70a) Indiv sing loudly and energetically H70b) Indiv participant swing legs vigorously
Line 71	The rest of the participants stare at my finger as I point to the board however they do seem to be singing the words more melodically but still very softly	H71a) Participants focus on PCS H71b) Participants sing softly H71c) Participants recognize PCS easier
Line 72	They seem more sure about the melody and the words	H72a) Participants remember melody from previous song
Line 73	The rest of the group gradually sing louder but Tom's singing is still overpowering the other members	H73a) Participants sing gradually louder H73b) Indiv singing overpowers other

Line 74	When we get to greet the last animal, which is Mr. Snake, Lisa sing very loudly the words "snake". Overall the participants seem to recognize the picture symbol of the chorus section with ease as they all seem more iconic	H74a) Individ imitate vocal sound of animal being greeted H74b) Iconicity of chorus PCS seem higher
Line 75	I continue to the verse section again	H75a) Repetition of verse
Line 76	The first two words the group members seem unsure about some of the lyrics but soon after the group start to sing louder, especially Tom who almost starts shouting the words in a higher pitched voice than what he usually sings with	H76a) Participants unsure of words H76b) Participants gradually sings louder H76c) Individ sings louder in high pitched voice H76d) Participants recognize PCS with ease H76e) Individ singing portrays emotions of silliness and joy
Line 77	The second repeat of the verse Lisa sings along in a monotonic voice but she seems to be pronouncing most of the words and stares around the room and not at the board, just like the rest of the group participants	H77a) Repetition of verse H77b) Individ monotonic singing H77c) Individ recognize PCS with ease H77d) Participants distracted by objects in the room H77e) Participants make meaningful eye contact with each other and therapist H77f) Individ pronounces words clearly
8:55		
Line 78	I place the communication board on an open chair next to me and I pick up my guitar	
Line 79	I start to sing the song calmly	H79a) Therapist sings calmly H79b) Repetition of verse
Line 80	I give a prominent strum at the beginning of every line and hold the chord to fade by itself as I point to the picture symbols using my strumming hand	H80a) Therapist alternate directing attention to PCS and strumming of guitar
Line 81	The group members follow my finger as I point to each picture symbol as the song continues. The participants stare at me with blunted facial expressions and the overall level of engagement is low in energy	H81a) Participants focus on PCS H81b) Participants engage with low energy H81c) blunted facial expressions
Line 82	Tom is the only participant that is singing along with me	H82a) Individ participant sing with therapist

Line 83	He sings soft but energetically	H83a) Indiv participant sing softly and with high energy
Line 84	When we move to the chorus section I stop pointing to the picture symbols and strum in an energetic and but still gentle and moderately fast paced tempo as we greet the animals	H84a) Repetition of chorus H84b) Participants read PCS by themselves H84c) Music is energetic and fast paced
Line 85	The participants follow the picture symbols by themselves and seem to do well by doing so with the chorus section	H85a) Participants focus on PCS H85b) Participants recognize PCS with ease H85c) Participants dependent on PCS to remember words
Line 86	All participants look at the communication board but they sang louder and pronounced all the words correctly	H86a) Participants focus and dependent on PCS to remember words H86b) Participants sing louder H86c) Participants pronounce words clearly
Line 87	I repeat the chorus section again	H87a) Repetition of chorus
Line 88	Tom confuses this song with the previous song "under the water" and I verbally remind him that we are now singing a different song	H88a) Indiv sing previous songs words H89b) Therapist verbally remind participant of new song
Line 89	I slow down the tempo as we move back to the verse section	H89a) Therapist slows down music to a slower pace H89b) Repetition of verse
Line 90	I strum the guitar once and use my strumming hand to rather point to the picture symbols	H90a) Therapist alternate directing attention to PCS and strumming of guitar
Line 91	The participants sing along with low energy and blunted facial expressions and also very softy. Tom and Christopher attentively watch my hand as I point to the picture symbols while Lisa looks around the room and occasionally say a few words	H91a) Participants sing softly and slowly H91b) Two Participants focus on PCS H91c) Participants dependent on PCS to remember words H91d) Blunted facial expressions H91e) Indiv loss of interest and focus H91f) Participants engage with low energy
Line 92	Tom sings the loudest and overpowers the rest of the participants singing	H92a) Indiv singing overpowers others

Line 93	Lisa at one point starts looking around the room and occasionally softly sing some of the key words such as "me" and "animals"	H93a) Indiv mumble occasional words softly H93b) Indiv remember iconic PCS H93c) Indiv distracted by objects in the room
11:00		
Line 94	I invite Christopher to help me by pointing to the correct picture symbols as we sing it. At first he seems unsure of what I am asking so I model the pointing to the first verse to which he copies me and starts pointing at the appropriate time	H94a) Therapist invite indiv participant to point PCS H95b) Therapist models pointing to PCS
Line 95	I carefully match the tempo he points with my guitar strumming and sing along enthusiastically	H95a) Therapist match strumming tempo and singing with indiv PCS pointing H95b) Therapist sings with enthusiasm H95c) Indiv participant direct attention to PCS
Line 96	Tom and Lisa sing along softly. They smile as they attentively follow Christopher's finger	H96a) Participants sing softly H96b) Participants focus on PCS H96c) Participants smile
Line 97	When we have to repeat the verse again he seems confused and unsure to where he must point next	H97a) Repetition of verse H97b) Indiv forgets to repeat verse section
Line 98	I assist him by showing him which symbol is the first symbol again	H98a) Therapist models pointing to PCS to indiv
Line 99	The second time Lisa and Tom sings a long enthusiastically and loudly. Lisa looks around the room and Tom moves around in his chair looking bored	H99a) Two participants sing with therapist with enthusiasm and louder H99b) Indiv loss of focus and attention H99c) Indiv moves around in chair suggesting boredom
Line 100	Tom sings along very loudly and confuses some of the words of the song with the previous songs words	H100a) Indiv sing previous songs words
Line 101	I assist Christopher by showing him where the next symbol is which is the "hello" symbol to greet all the animals	H101a) Indiv forgets to point to chorus section H101b) Therapist models pointing to PCS to indiv
Line 102	He starts to explain to me verbally that we are going to greet all the animals and in a very fast paced tempo of speaking, he names some of the animals	H102a) Indiv remembers song theme

Line 103	I acknowledge him and we continue with the song	H103a) Therapist verbally acknowledge indiv
Line 104	Christopher struggles to understand fully that he now has to continue the song by pointing to the picture symbols	H104a) Indiv participant forgets to point chorus section
Line 105	Tom gets up from his chair and takes over Christopher's job	H105a) Other Indiv spontaneously direct attention to PCS
Line 106	Christopher sits back and continues to sing along softly as he attentively start at the board	H106a) Indiv sings softly H106b) Indiv focus on PCS
Line 107	When we get to the verse section Tom knows very well where to point	H107a) Indiv participant directs attention to PCS
Line 108	He points rhythmical and the music has a very nice flow to it	H108a) Indiv participant directs attention to PCS H108b) Indiv points rhythmically
Line 109	As he stands and point to the picture symbols, he covers the entire board with his body	
Line 110	Lisa is unable to see the communication board properly and she stomps to sing when we return to the verse section	H110c) Participants dependent on PCS to remember words H110b) Repetition of verse
Line 111	Christopher also stomps singing and Tom focuses on pointing and does not sing so I finish the song by myself	H111a) Therapist sings alone H111b) Indiv focus on directing attention to PCS H111c) Indiv participant struggle to multi-task reading PCS, sing and point to PCS
12:35		
Line 112	Lisa stands up spontaneously when the song ends and Tom goes back to his seat	H112a) Indiv stands up spontaneously for a brief moment in excitement
Line 113	Lisa voluntarily wants to help with the pointing to the picture symbols	H113a) Indiv eagerly volunteers to direct attention to PCS H113b) Indiv stands up and start pointing spontaneously to PCS
Line 114	I verbally invite the rest of the group sing along	H114a) Therapist verbally invite participants to sing
Line 115	Tom adjusts his chair so he can see the board a bit more properly as Lisa is covering it with her entire body	H115a) Indiv dependent on PCS to remember words

Line 116	As we start to sing the song, both Christopher and Tom sing along however Tom's voice is overpowering and the other participants singing cannot be heard at all	H116a) Indiv participant directs attention to PCS H116b) indiv singing overpowers others
Line 117	Lisa points to the picture symbols very rhythmically and sync with the singing of the group	H117a) Indiv direct attention to PCS rhythmically
Line 118	Tom sings the song of the old song and I suspect that he might be doing it on purpose this time	H118a) Indiv sings previous songs words on purpose
Line 119	I confront him about it and he agrees to stop doing it	H119a) Therapist verbally confronts indiv
Line 120	We sing the verse again with enthusiasm and Tom sings loudly along and Lisa points to the correct PCS on time	H120a) Repetition of verse H120b) Participants and therapist sing together with enthusiasm H120c) Indiv singing overpowers others H120d) Indiv participant direct attention to PCS
Line 121	When we get to the chorus section, I sing more energetically but the tempo remains moderately fast paced	H121a) Repetition of chorus H121b) Music is moderately fast tempo H121c) Therapist strum guitar energetically
Line 122	Lisa continues to attentively point to the correct PCS and Tom sings with high energy all the correct words and melodically	H122a) Indiv participant direct attention to PCS H122b) Indiv sings loudest of all H122c) Indiv remembers melody H122d) Indiv recognize PCS with ease
Line 123	When we return to the verse section I change my strumming to a combination of Picking and strumming which is overall calm and gentle	H123a) Repetition of verse H123b) Guitar accompaniment shifts to gentle and calmer
Line 124	The dynamics and tempo decreases and the song are more calm and gentle	H124a) Guitar accompaniment shifts to calming and gentle
Line 125	I thank Lisa when we finish the song as she proudly says "yeah"	H125a) Therapist verbally affirm participants response
Line 126	She goes back to her seat	
14:18		

Line 127	I invite everyone to sing it along with me one more time and also to follow the picture symbols by themselves	H127a) Therapist verbally invite participants to sing H127b) Participants read PCS by themselves
Line 128	I count to 4 and start to play the guitar by strumming and picking guitar as an introduction to the sing	H128a) Repetition of verse
Line 129	I play lively and energetic	H129a) Therapist strum guitar lively and energetic
Line 130	The tempo is a moderately fast pace	H130a) Guitar strumming is a moderately fast tempo
Line 131	I rock my upper body from one side to the other as I strum and pick the guitar	H131a) Therapist rocks upper body matching the pulse of the music
Line 132	As we start to sing, some of the members start to copy my rocking movement	H132a) Participants imitate therapist rocking movements
Line 133	They sing loudly and lively and Tom can be heard the most however he does not overpower the other members this time	H133a) Participants sing with therapist loud and lively H133b) Indiv sing loudest
Line 134	The members follow the picture symbols most of the time while smiling as they sing cheerfully	H134a) Participants occasionally dependent on PCS to remember words H134b) Participants smile H134c) Participants sing cheerfully
Line 135	The quality of their voices are melodic, they seem very sure of the melody but some of the words are being mumbled sometimes however all participants seem engaging and focused on the song and activity. Overall the participants sing with confidence	H135a) Participants sing melodic H135b) Participants remembers melody H135c) Mumbling of some words H135d) Participants body posture indicate social engagement and eagerness to participate H135e) Participants sing with confidence
Line 136	As we greet the animals, Lisa imitates an elephant by lifting her arm in the air as if it were an elephant's trunk	H136a) Indiv participant imitate the trunk of an elephant H136b) Repetition of chorus
Line 137	When greeting the different animals, all participants carefully watch the picture symbols	H137a) Participants focus on PCS H137b) Participants dependent on PCS to remember words
Line 138	All the animals are pronounced loudly and correctly as the chorus sections PCS seem to be more iconic	H138a) Participants pronounce words clearly H138b) Iconicity of PCS for chorus seems high

Line 139	I keep the guitar accompaniment exactly the same throughout the entire song	H139a) Therapist strums guitar lively and energetic
Line 140	I also keep the tempo and dynamics the same for the entire song	H140a) Guitar strumming is a moderately fast tempo
Line 141	The members rock their upper bodies throughout the song and swing their feet energetically at the last repeat of the verse	H141a) Participants rock upper bodies energetically H141b) Repetition of verse
Line 142	I end the song with a prominent last strum on the guitar and praise them for their efforts	H142a) Therapist verbally affirm indiv
Session notes	The song learning went much faster because of the board and also the participants already knew the melody of the song	
	The participants took turns to point to the picture symbols on the board so I could strum the guitar properly	
	I suspect Tom sang the lyrics of "Under the water" instead of the new lyrics on purpose some of the times and I had to ask him to stop doing it after the third time	
	There was very little eye contact from me to the group and also from the group with me because we were all attentively following the picture symbols on the communication board	

## Appendix W: Thick descriptions I

I	At the circus	
28-Apr-16	Session 2 without pcs Group A	
Time (minutes into session)	Thick description	Code
6:14		
Line 1	I ask the group if they can remember what our new song is about	I1a) Therapist ask participants what the song is about
Line 2	Ellen answers by saying "the circus song"	I2a) Indiv immediately remembers song theme
Line 3	I play an introduction to the song moderately fast and calmly on the guitar and count to four	I3a) Therapist plays introduction moderately fast and calmly
Line 4	We start to sing the verse in a moderately fast and lively tempo	I4a) Music is moderately fast and lively
Line 5	The first time we sing the verse, the participants sing along with blunted facial expressions. They attentively look at me and the guitar	I5a) Participants blunted facial expressions I5b) Participants focus on therapist and music I5c) Participants make eye contact with therapist
Line 6	They seem unsure about some of the words however most of the words are pronounced clearly	I6a) Unsure of some verse lyrics I6b) Participants remembers most verse lyrics well
Line 7	Very little mumbling takes place	I7a) Clear pronunciation of words
Line 8	The participants also seem to remember the melody very well however their quality of singing is very flat and low in energy	I8a) Participants remember melody I8b) Participants low energy and flat quality of singing
Line 9	After singing the verse once I pause the music for a short moment in which two students walk into the room and start greeting me	

Line 10	After the interruption I start the song from the beginning	I10a) repetition of verse
Line 11	I play it very lively and in a faster pace	I11a) Therapist strums guitar lively and fast paced
Line 12	All participants sing along, they look at me and the guitar with blunted facial expressions	I12a) Robotic response I12b) blunted facial expressions
Line 13	I make eye contact with each member often. Albert hops in his chair but not with a lot of energy. The rest of the group members seem to remember the lyrics and the melody but they sing very softly and the quality of their voices is flat and very low in energy	I13a) Therapist makes eye contact with participants I13b) Indiv hops in chair I13c) Participant remembers verse lyrics I13d) Participants remembers melody I13e) Participants sings softly with low energy and flat voices
Line 14	I pause the music before continuing with the chorus section	I14a) Therapist pause music
Line 15	I ask the group who we greet first	I15a) Therapist ask participants which animal is greeted
Line 16	Tshepo answers with confidence by singing the line "Hello Mr. Elephant"	I16a) Indiv spontaneously answer therapist by singing line I16b) Indiv remembers chorus melody and lyrics I16c) Indiv sings with confidence
Line 17	I praise her for remembering the lyrics and invite the group to sing together the line lively and loudly. Ellen and Albert sing with blunted facial expressions while Tshepo smiles	I17a) Therapist verbally affirms indiv for remembering lyrics I17b) therapist and participants sings cheerfully and loud I17c) Indiv smiles I17d) Two participants blunted facial expressions
Line 18	I ask the group who we greet after Mr. Elephant	I18a) Therapist ask participants which animal is greeted next
Line 19	Ellen answers by singing "hello Mr. Horse" loud and confidently	I19a) Indiv spontaneously sings answer I19b) Indiv remembers chorus lyrics and melody I19c) Indiv sings with confidence and loud

Line 20	The group and I sing together the line where the horse is being greeted loudly and with high energy. The participants remembers the melody very well as well as the lyrics	I20a) therapist and participants sing cheerfully, loud with high energy I20b) Participants remembers chorus melody and lyrics
Line 21	I continue with the song and keep quiet when the next animal has to be named	I21a) Therapist invite participants sing by themselves
Line 22	Albert sings "Mr. Grizzly Bear" confidently and rhythmically as well as melodically. I acknowledge him and sing along with him. Albert looks at me as he hops in his chair rhythmically while he sings The rest of the group makes eye contact with me and attentively listens to Albert's singing	I22a) Indiv sings with confidence I22b) Indiv remembers chorus melody and lyrics I22c) Indiv makes meaningful eye contact with therapist I22d) Indiv hops in chair rhythmically I22e) Participants focus on singing indiv I22f) Participants makes meaningful eye contact with therapist
Line 23	We greet the last animal which is Mr. Snake	
Line 24	I give a hint to the group by hissing like a snake	I24a) Therapist give vocal imitation as reminder of the lyrics for chorus
Line 25	Tshepo excitedly shouts out loud "snake" as the rest of the group sing along energetically while making eye contact with me	I25a) Indiv spontaneously shouts answer I25b) Participants sing energetically and loud I25c) Participants make meaningful eye contact with therapist I25d) Indiv remembers chorus lyrics
Line 26	I repeat the chorus section	I26a) Repetition of chorus
Line 27	The participants sing along enthusiastically and seem sure about the animals we need to greet at the correct time	I27a) Participants remember chorus lyrics I28b) Participants sing with confidence
Line 28	All participant look at me throughout the chorus section	I28a) Participants make meaningful eye contact with therapist

Line 29	I seem to be making a large amount of eye contact with each member in the group throughout the song however they sing with very little facial expressions, it appears more blunted in contrast to their quality of singing which is lively and confidently	I29a) Therapist make meaningful eye contact with each indiv participant I29b) Blunted facial expressions I29c) Participants sing lively and with confidence
Line 30	After the chorus section we return to the verse	I30a) Repetition of verse
Line 31	I slow down the tempo to a moderately fast and calm pace	I31a) Therapist change music to moderately fast and calm
Line 32	The guitar accompaniment changes from a lively and vigorous strumming to a combination of moderately fast and cheerful picking and strumming	I32a) Therapist guitar accompaniment changes to moderately fast and cheerful
Line 33	The participants sing softer and seem calm. They seem to adjust their singing with ease however they are still sitting very still in their chairs with blunted facial expressions	I33a) Participants sing slow and softly I33b) Participants adjust to tempo and dynamic shift with ease I33c) Blunted facial expressions
8:13		
Line 34	After repeating the verse I move to the chorus section directly	I34a) Repetition of chorus
Line 35	I slow down the tempo even more and strum loud and almost lazy sounding	I35a) Therapist plays very slow tempo I135b) Therapist plays with a lazy strumming
Line 36	With each prominent strum, I rock my upper body back and forth to which Tshepo copies this movement by nodding his head to the pulse of the music	I36a) Therapist rocks upper body matching pulse of music I35b) Indiv imitates therapist by nodding head to pulse of music
Line 37	The participants sing louder and adjust to the tempo with ease however their facial expressions remain blunted and the energy is very low	I37a) Participants sing loud and slowly I37b) Participants adjust to tempo and dynamic shift with ease I37c) participants engage with low energy I37d) Blunted facial expressions
Line 38	After greeting the first animal I dramatically adjust the tempo and characteristics of my singing and playing to a fast and vigorous playing and singing	I38a) Therapist alternates tempo and dynamics between the lines from slow and soft to loud, fast and vigorous singing and playing

Line 39	The participants look at me in anticipation as I stop playing and keep silent after the second animal is greeted with blunted facial expressions. They sing with me but the quality of their signing is very flat and low in energy	I39a) Therapist creates anticipation I39b) Participants body posture indicate low energy and little participation I39c) Participants make meaningful eye contact with therapist I39d) Blunted facial expressions I39e) Low energy singing I39f) Flat quality of singing
Line 40	I continue greeting the third animal but adjust my playing and singing to that similar of the first animal being greeted which is slow paced and a lazy way of strumming the guitar	I40a) Therapist strums at very slow tempo and with a lazy strumming
Line 41	The participants sing along loudly and attentively look at me with blunted facial expressions. They sit still in their chairs as they attentively look at me and the guitar	I41a) Participants make meaningful eye contact with therapist I41b) Blunted facial expressions I41c) Physical movement indicate low energy I41d) Participants focus on therapist
Line 42	I make a large amount of eye contact with each participant	I42a) Therapist make meaningful eye contact with each indiv participants
Line 43	I add anticipation before greeting the fourth and last animal	I43a) Therapist add anticipation
Line 44	I suddenly and unexpectedly start to singing the greeting of the last animal fast paced with vigorous strumming	I44a) therapist plays fast paced with vigorous strumming
Line 45	The participants sing along at the same pace and high energy	I45a) Participants match music with high energy singing
Line 46	Albert starts to hop in his chair for a brief second and smilingly looks at Ellen sitting next to him. All the participants sing along so far and seem to remember the lyrics as well as the melody very well	I46a) Indiv participant hops in chair for brief moment I46b) Indiv smiles at other indiv I46c) Indiv makes meaningful eye contact with other indiv I46d) Participants remembers chorus melody and lyrics
Line 47	When the phrase ends I add another anticipation	I47a) Therapist adds musical anticipation
Line 48	I start to sing the verse section	I48a) Repetition of verse

Line 49	The first line of the verse I sing very slow paced with combination of lazy strumming and picking to which the participants sing along matching my singing with blunted facial expressions but the quality of their voice is confidently They attentively look at me and my guitar	I49a) Therapist sings and strums guitar slowly and lazy I49b) Participants adjust to tempo and dynamic shift with ease I49c) Participants sing slow and lazy I49d) Participants focus on music and therapist I49e) Blunted facial expressions I49f) Participants sing with confidence
Line 50	The second line I sing in a fast pace with vigorous strumming with no picking	I150a) therapist plays and sings fast paced and vigorous
Line 51	Each line alternated in the same manner until the end of the repeat of the verse	I151a) Therapist alternates tempo and dynamics between the lines from fast and vigorous singing and playing to slow and soft to loud
Line 52	The participants hop in their chair of excitement when the music is fast paced with vigorous strumming and sing faster and calmer along with slow and small rocking movements of the upper body when the music is slowly paced and the strumming and picking of guitar is played in a lazy manner	I52a) Participants adjust to tempo and dynamic shift with ease I52a) participants hop energetically in their chairs I52c) Participants body language indicate excitement and eagerness to participate
Line 53	The participant's watch me attentively, particularly during anticipated moments where the participants cannot predict when the song might continue or not or what I might do next. Lisa and Ellen sometimes sing the lyrics before I start to play. The participants seem to know the melody and lyrics very well by memory. They smile at me and each other	I53a) Participants make meaningful eye contact with therapist I53b) Participants dependent on therapist musical cues and body language I53c) Participants remembers verse melody and lyrics well I53d) Participants make meaningful eye contact with therapist I63e) Participants smiles at therapist and each other
8:48		
Line 54	I continue to the chorus section	I54a) Repetition of chorus
Line 55	Each line I alternate between a fast tempo with vigorous guitar strumming and a slow paced tempo with a lazy picking and strumming as accompaniment	I55a) Therapist alternates tempo and dynamics between lines from slow and soft to loud, fast and vigorous singing and playing

Line 56	The first line I start with the slow paced tempo with lazy picking and strumming as accompaniment	I56a) Therapist guitar strumming is slow and lazy sounding
Line 57	I add many unexpected anticipations between the lines	I57a) Therapist adds anticipation
Line 58	The participants hop in their chairs in excitement when the tempo is fast. They all remembers the lyrics as well as the melody perfectly and pronounce each word clearly and with confidence	I58a) Participants hop in chairs in excitement I58b) Participants adjust to tempo and dynamic shift with ease I58c) Participants remembers chorus melody and lyrics very well I58d) Words are pronounced clearly I58e) Participants sing with confidence
Line 59	They sing louder and livelier and make regular eye contact with each other and myself	I59a) Participants sing loud and lively I59b) Participants make meaningful eye contact with therapist and each other
Line 60	Ben's hands flops around as he hop in his chair as he smiles widely and looks at Ellen. When we greet the last animal, Tshepo gets very excited and shouts very loud instead of singing. The participants body language is open and indicates a sense of excitement and eagerness to participate	I60a) Indiv Participant flops hands in the air energetically I60b) Indiv makes meaningful eye contact with other Indiv I60c) Indiv smiles widely I60d) Participants body language indicate excitement, openness and eagerness to participate
Line 61	I move to the verse section again, this time the slower paced tempo is even more slower and I rock my upper body from one side to the other dramatically thus matching the slow tempo and strong pulse	I61a) Repetition of verse I61b) Therapist's music is slow paced I61c) Therapist rocks upper body matching the pulse of the music
Line 62	The participants sing along loudly and excitedly. The overall energy in the room as shifted to high energy	I62a) Participants sing loudly and energetic
Line 63	Tshepo rocks his head from one side to the other matching the pulse of the music. The participants smile at me and attentively look at the guitar	I63a) Participants imitates therapist rocking movement I63b) Participants smile
Line 64	I pause for a few seconds and make eye contact with the participants	I64a) Therapist makes meaningful eye contact with participants I64b) Therapist pauses music

Line 65	I add anticipation by pretending to be going to play but then don't	I65a) Therapist adds anticipation
Line 66	Suddenly I start to play lively and at a faster tempo which the participants could not predict that easily	I66a) Therapist unpredictable start singing and playing
Line 67	They sing along excitedly and lively	I67a) Participants sing with excitement and lively
Line 68	They hop around in their chairs with high energy	I68a) participants hop in chairs energetically
Line 69	Ben's arms flops on the air as he hops energetically	I69a) Individ participant flops arms in the air energetically
Line 70	The third animal we greet I play the slowly paced and rock my upper body from one side to the other dramatically	I70a) Therapist rocks upper body matching the pulse of the music I70b) Therapist's music is slow paced
Line 71	The participants rock their upper bodies in similar fashion thus matching the strong prominent pulse of the music	I71a) Participants imitate therapist's slow upper body rocking movement
Line 72	The sing along loudly and lively and participate with high energy	I72a) Participants sing lively and loudly I72b) Participants participate with high energy
Line 73	The often look at each other but most of the time they are watching my inviting and excited facial expression and my body language attentively	I73a) Therapist body language and facial expression is inviting and open I73b) Participants focus on therapist I73c) Participants make meaningful eye contact with therapist
Line 74	The last line Ellen sings alone in a fast pace and with a lot of force and confidence. Overall the energy and level of participation is high	I74a) Individ sings loudly I74b) individ sing with confidence at a fast paced tempo I74c) Participants participant with high energy
9:29		
Line 75	I move to the chorus section	I75a) Repetition of chorus
Line 76	The tempo is moderately fast but we are now singing very softly that it almost sounds like a whisper	I76a) Music is moderately fast I76b) Participants and therapist sing whisper-like
Line 77	The participants adjust with ease to the dynamic changes	I77a) Participants adjust to tempo and dynamic shift with ease I77b) Participants whisper lyrics

Line 78	The softer we sing the more I leans into the middle of the circle	I78a) Therapist leans forward to middle of group I78b) Participants make meaningful eye contact with therapist and others
Line 79	The second animal we greet I play loud and at a very fast paced tempo. We make meaningful eye contact with each other as I lean forward	I79a) Therapist shifts music to fast a paced tempo and loud
Line 80	All participants sits up straight as soon as we sing faster and louder	I80a) participants adjust to tempo and dynamics shift with ease
Line 81	They sing along vigorously and confidently and remember the words well. Tshepo shouts very loudly the lyrics every time we sing fast and vigorously. He smiles widely and his body language is open and indicates excitement and eagerness. Albert's smiles widely at me and Ellen	I81a) Participants sing with confidence I81b) Participants remembers chorus lyrics I81c) Indiv shouts lyrics loudly and with force from excitement I81d) Indiv smiles at therapist and other indiv I81e) Indiv makes meaningful eye contact with therapist and other indiv I81f) Indiv body language indicate excitement and eagerness to participate
Line 82	The third animal we greet is soft and gentle to which the participants musically adjust their singing to match the guitar accompaniment and my singing with ease	I82a) Therapist shifts music to soft and gentle I82b) Participants adjust to tempo and dynamic shift with ease
Line 83	We whisper the words again	I83a) Therapist and participants whisper lyrics
Line 84	I add a moment of anticipation before greeting the last animal	I84a) Therapist adds musical anticipation
Line 85	As soon as we start to greet the last animal in a fast and loud and vigorous tempo, Tshepo starts shouting and singing with a lot of force the last line. The rest of the group smile in excitement	I85a) Therapist shifts music to loud and fast paced I85b) Participants adjust to tempo and dynamic shift with ease I85c) Indiv shouts loudly in excitement I85d) Participants cheerfully smile at each other I85e) Participants make meaningful eye contact with each other and therapist
9:45		

Line 86	I move to the verse section	I86a) Repetition of verse
Line 87	The tempo is lively and energetic	I87a) Therapists music is lively and energetic
Line 88	I strum and pick in a fast pace for the first line	I88a) Therapists guitar accompaniment is fast paced
Line 89	The participants sing a long lively and confidently. They sing all the lyrics clearly and remember the melody very well. They look at me attentively and make meaningful eye contact with me. Tshepo smiles widely and imitates my rocking movements	I89a) Participants sing lively and with confidence I89b) Participants remembers verse melody and lyrics I89c) Participants pronounce lyrics clearly I89d) Participants focus on therapist and music I89e) Participants makes meaningful eye contact with therapist I89f) Indiv smiles widely I89g) Indiv imitates therapist's rocking body movement
Line 90	The second line is slow, calm and softly sang and played	I90a) Therapist's dynamics alternate from energetic to calm and soft during
Line 91	The participants sing softly, almost sounds like they are whispering the words of the song	I91a) Participants adjust to tempo and dynamic shift with ease I91b) Participants and therapist sing whisper-like
Line 92	The third line we sing in a fast paced and lively again	I92a) Therapist shifts music to lively and fast paced I92b) Participants adjust to tempo and dynamic shift with ease
Line 93	The last line of the verse is sung calmly and softly at a moderately slow paced tempo to which the participants adjust their voices and energy with ease. The participants make meaningful eye contact with me and attentively stares at me and my guitar	I93a) Therapist shifts music to slow and calm I93b) Participants adjust to tempo and dynamic shift with ease I93c) Participants interested and focus on therapist and music I93d) Participants make meaningful eye contact with therapist
Line 94	I continue to the Chorus section	I94a) Repetition of chorus
Line 95	The first animal we greet I keep the tempo and dynamics the same as the last line of the verse	I95a) Therapist's music is slow and calm
Line 96	Before greeting the second animal I add a moment of anticipation	I96a) Therapist adds musical anticipation

Line 97	The participants watch me attentively and sing along with high energy and confidence. They smile widely and look at each other often. They wiggle and hop in their chairs matching the pulse of the music	197a) Participants sing with high energy and enthusiasm 197c) Participants make meaningful eye contact with therapist 197d) Participants smile widely 197e) participants make meaningful eye contact with each other 197f) Participants wiggle and hop in their chairs in excitement matching pulse of the music
Line 98	I stop singing along and only let the group sing by themselves from the middle of the second animals greeting	198a) Participants sing alone cheerfully
Line 99	The group adjusts with easy between the alternating tempo and dynamic changes between the different animals being greeted by only reading my body language and attentively listening to the music and predicting the tempo and dynamic changes in the music	199a) Participants adjust to tempo and dynamic shift with ease 199b) Participants predict tempo and dynamic changes by themselves 199c) Participants remembers chorus melody and lyrics by themselves 199d) Therapist uses body language to indicate musical cues 199e) Participants focus on music
Line 100	They also remember the order in which the animals are being greeted correctly	1100a) Participants remember chorus lyrics by themselves
Line 101	All participants sang with confidence and enthusiasm and predicted and adjusted their singing to the sudden musical shifts with ease	1101a) Participants sing by themselves with confidence and high energy 1101b) Participants adjust to tempo and dynamic shift with ease
10:26		
Line 102	I join the group by continuing to the verse section and singing with them	1102a) Repetition of verse
Line 103	The whole verse is sang in a lively and energetic but moderately fast paced tempo without any sudden tempo or dynamic changes	1103b) participants sing lively and energetic

Line 104	The participants sing along with enthusiasm and confidence. They attentively look at me and my guitar with blunted facial expressions. Albert and Tshepo often hop in their chairs or rock their upper bodies to the rhythm of the pulse	I104a) Participants sing with confidence and enthusiasm I104b) Participants focus on therapist and the music I104c) Blunted facial expressions I104d) Two indiv hop and rock to the pulse of the music
Line 105	All the words of the song is pronounced clearly and correct by all participants	I105a) Participants remember verse lyrics with ease I105b) Participants pronounce lyrics clearly
Line 106	When we get to the chorus section the first animal being greeted starts off softly and then it gradually grows louder in dynamics to which the participants adjust their singing with ease	I106a) Repetition of chorus I106b) Therapists music gradually shifts from soft to loud I106c) Therapists Tempo remains consistent I106d) Participants adjust to tempo and dynamic shift with ease
Line 107	The rest of the chorus section stays the same in terms of tempo and dynamics	I107a) Tempo and dynamics remain consistent
Line 108	The participant sings along with enthusiasm and confidence and pronounces all the words clearly. They remember the lyrics and the melody very well. The attentively look at me and make meaningful eye contact with me	I108a) Participants sing with therapist with confidence I108b) Participants remember chorus lyrics with ease I108c) Participants remembers melody I108d) Participants focus on therapist and music I108e) Participants makes meaningful eye contact with therapist
10:55		
Line 109	The first line of the verse is sung in a moderately slow pace	I109a) Repetition of verse I109b) Music is moderately slow paced
Line 110	The participants sing along cheerfully and rock their upper bodies from one side to the other on the main and steady pulse of the music	I110a) Participants sing with therapist cheerfully I110b) Participants rock upper bodies to the pulse of the music
Line 111	The second line of the song is fast paced with vigorous strumming	I111a) Therapist shifts music to fast paced tempo and vigorous strumming of guitar

Line 112	The participants hop in their chairs in excitement and sing along loudly as they make meaningful eye contact with me. They all smile widely at me	I112a) Participants hops in chairs energetically I112b) Participants sing loudly I112c) Participants make meaningful eye contact with therapist I112d) Participants smile widely
Line 113	The third line is slower and softer	I113a) Music shifts to slow paced tempo and softer
Line 114	The participants immediately lower their voices and adjust their body movements to the main pulse of the music	I114a) Participants adjust to tempo and dynamic shift with ease I114b) Participants adjust physical movements matching tempo and pulse of music I114c) Participants sing softly and slowly
Line 115	The last line of the verse is played and sang loud, lively and vigorously	I115a) Therapist shifts music to fast paced tempo and vigorous strumming of guitar and singing
Line 116	The participants hop in their chairs and sing with confidence. Their singing matches the guitar accompaniment	I116a) Participants adjust to tempo and dynamic shift with ease I116b) Participants adjust physical movements matching tempo and pulse of music I116c) Participants body language indicate excitement and eagerness to participate I116d) Participants sing loudly and with force I116e) Participants quality of voice is strong and energetic
Line 117	I end the song by adding a short ritardando at the end of the last line of the verse and playing a strong and prominent last chord on the guitar to which the Tshelo shout the last words very loudly while smiling at me. Albert smiles widely at Ellen. The participants adjust their singing to the ritardando with ease	I117a) Therapist's music ends with a ritardando I117b) Individ shouts last word of the song loudly and confidently I117c) Participants smiles widely I117d) Individ makes meaningful eye contact with other indiv
Session notes	By the end of the session they knew the words of the song very well and sang it fluently and with confidence	

	I only had to go through the words once this time, thereafter they remembered it very well
	I was able to play around with tempo and dynamics thus making the song more interesting and exciting
	The participants seem to enjoy the different variations of the song as they hopped in their chairs, swung their arms and feet and smiled widely
	I also felt that there was a healthy amount of eye contact being made throughout the sessions with the participants and myself as well as with each other
	The song learning section was socially very engaging and playful

Appendix X: Thick descriptions J

J	At the circus	
28-Apr-16	Session 2 with pcs Group B	
Time (minutes into session)	Thick description	Code
6:33		
Line 1	I point to the first picture symbol which is the symbol for here	J1a) Therapist direct attention to PCS
Line 2	I ask the participants which word the symbol represents	J2a) Therapist ask participants a question about PCS
Line 3	Lisa points to the board and says "the"	J3a) Participant associate PCS with own meaning
Line 4	I explain to her that the symbol represents the word "here" I move to the next picture symbol	J4a) Therapist explain intended PCS meaning
Line 5	Tom starts eagerly and cheerfully singing the first line of the song	J5a) Indiv spontaneously sing J5b) Indiv recognize PCS with ease J5c) Indiv remembers melody
Line 6	I continue with the song by first saying the words of the song as I point to each one	J6a) Therapist direct attention to PCS J6b) Therapist read PCS words out loud
Line 7	The participants remember words such as "lots and lots" with ease. The participants seem interested and excited as they smile widely and sit straight up in excitement	J7a) Participants remember words with absent PCS J7b) Participants remember words from previous song J7c) Participants smile J7d) Participants body language indicate excitement and eagerness to participate
Line 8	Lisa and Tom says most of the words along with me	J8a) Two participants recognize PCS immediately
Line 9	The second time I repeat the verse I added the melody as I point to each picture symbol as we sing it	J9a) Repetition of verse J9b) Therapist verbally introduce melody J9c) Therapist direct attention to PCS

Line 10	Lisa points to herself using her thumb similar to the picture symbol that represents the word "me" at the end of the verse the ends with picture symbol for the word "me" which she remembers well due to it being an iconic picture symbol	J10a) Individ imitate intended PCS by pointing to herself J10b) Iconicity of PCS seems high
Line 11	Tom sings the loudest, his voice is almost overpowering the other group member's voices however one can see that Lisa and Christopher are mumbling the words of the song with us as their lips are moving. Lisa and Christopher sing with low energy and all the participants attentively read the picture symbols with blunted facial expressions	J11a) Individ singing overpower others J11b) Two individ participants mumble words J11c) Participants focused on PCS J11d) Participants low energy J11e) Blunted facial expressions
Line 12	After repeating the verse I continue to the chorus section where the animals are being greeted	J12a) Repetition of chorus
Line 13	I verbally ask the members who we greet first	J13a) Therapist ask participants a question about song
Line 14	At first the members seem unsure which animal we greet first when Tom shouts out "elephant"	J14a) Participants forget word with absent PCS J14b) Individ participant immediately remembers word with absent PCS J14c) Individ shouts answer cheerfully and with confidence
Line 15	I praise him and while I stick the picture symbol of an elephant on the communication board, Christopher shouts out "elephant king"	J15a) Individ associated own meaning with intended PCS J15b) Therapist verbally affirm indiv J15c) Therapist add PCS to board
Line 16	We greet Mr. Elephant cheerfully	J16a) Participants and therapist sing together cheerfully
Line 17	Tom sings Mr. Horse instead of Mr. Elephant	J17a) Individ predicts words incorrect
Line 18	I continue to the next animal being greeted by continuing the song	
Line 19	The next animal we greet is Mr. Horse	
Line 20	As we sing the word "horse", I stick the picture symbol of a horse to the communication board to which the participants emphasize the word "horse"	J20a) Therapist adds PCS to board J20b) Participants emphasize iconic PCS

Line 21	Before I continue to sing the rest of the song, Tom shouts out excitedly the next animal being greeted which is Mr. Grizzly bear	J21a) Individ predicts words correct J21b) Individ body language indicate excitement and eagerness to participate
Line 22	We continue to sing the song by greeting Mr. Grizzly bear as I stick the picture symbol on the board	J22a) Therapist add PCS to board
Line 23	All of the participants sing along in excitement	J23a) Participants sing with excitement
Line 24	We continue to greet the last animal which is Mr. Snake	J24a) Therapist add PCS to board
Line 25	The group finishes the phrase however I pause before I sing the word "snake"	J25a) Therapist create musical anticipation
Line 26	I put an emphasis on the "s" sound of snake to which the participants copy me and shout out the word "snake"	J26a) Therapist emphasize "s" sound J26b) Participants imitate therapist's vocal sound J26c) Participants shout excitedly animal name
Line 27	We go back to the verse section	J27a) Repetition of verse
Line 28	All the participants sing along loudly and with confidence	J28a) Participants sing loud J28b) Participants sing with confidence
Line 29	They seem more sure about the lyrics of the verse	J29a) Participants recognize PCS with ease
Line 30	Tom's voice is heard the loudest of them all however one can hear the other participants voices as well as they sing along loudly however they stare at the board with blunted facial expressions	J30a) Individ sings louder
Line 31	Throughout the song the participants attentively look at my finger and the picture symbols as I point to it	J31a) Participants focus on PCS J31b) Therapist direct attention to PCS J31c) Blunted facial expressions J31d) Participants sing loudly
Line 32	The participants only made eye contact with me and each other when I asked them questions about the song	J32a) Participants make occasional eye contact with therapist and each other
8:22		
Line 33	I stand up to fetch my guitar	

Line 34	I ask Christopher if he will do the pointing to the picture symbols work for the group when sing the song	J34a) Therapist invite indiv participant to point PCS
Line 35	He immediately puts his left hands index finger on the first picture symbol of the verse	J35a) Participant eager to participate
Line 36	I play a short introduction on the guitar and count to four	
Line 37	The tempo of my plucking and strumming is lively and moderately fast	J37a) Therapist plays moderately fast and lively
Line 38	Smiling widely, Christopher points to the picture symbols correctly as we sing the song	J38a) Indiv participant directs attention to PCS J38b) Indiv smiles
Line 39	The rest of the group, including myself, look and follow Christopher's finger attentively as he points to the appropriate picture symbol	J39a) Therapist and participants focus on PCS
Line 40	Christopher does not sing with however the rest of the participants sing along excitedly and lively	J40a) Pointing indiv does not sing J40b) Participants and therapist sing lively and with excitement
Line 41	Tom sings the loudest and with the most confidence	J41a) Indiv participant sings louder and with confidence
Line 42	As we sing the word "me", Lisa imitates the picture symbol of a stick figure pointing to him/herself using his/her thumb	J42a) Indiv imitates PCS by pointing to herself
Line 43	When we sang the second repeat of the verse I had to remind Christopher that the verse starts from the beginning again	J43a) Repetition of verse J43b) Therapist verbally assist pointing participant by reminding the song form
Line 44	He started pointing at the correct picture symbol immediately	J44a) Indiv immediately directs attention to PCS
Line 45	The rest of the group sang along cheerfully and with high energy and did not seem phased that Christopher did not point to the first two picture symbols of the verse	J45a) Participants recognize PCS by themselves J45b) Participants sing cheerfully J45c) Participants sing with high energy
Line 46	When we reached the chorus section I remind Christopher to point to the picture symbol for "hello" and the first animal being greeted	J46a) Repetition of chorus J46b) Therapist verbally assist pointing indiv

Line 47	Tom stands up and points to the picture symbol for "hello" as Christopher remains seated and seem a bit confused to what I am asking him to do	J47a) Other indiv assist pointing indiv by modeling pointing
Line 48	I thank Tom for his help and invite Christopher to continue with the pointing to the picture symbols	J48a) Therapist verbally thanks volunteer indiv J48b) Therapist invite indiv to point PCS
Line 49	At first Christopher seems to not understand fully what to do	J49a) Indiv confused by therapist's invitation
Line 50	When I ask him to point to the "hello" picture symbol he waves at me friendly and say "Hello Mr. Elephant"	J50a) Therapist model by pointing to appropriate PCS J50b) Indiv associates intended meaning of PCS with waving movement J50c) Indiv speaks words instead of singing
Line 51	I started to sing the chorus section and as soon as we got to the greeting of the second animal, Christopher started pointing to the appropriate picture symbols	J51a) Indiv participant spontaneously directs attention to PCS
Line 52	All the participants, including Christopher, sang the chorus section loud, lively and with great enthusiasm and confidence as well as with all the correct words	J52a) Participants sing loudly and lively J52b) Participants recognize PCS with ease J52c) Indiv pointing PCS sing cheerfully
Line 53	We attentively followed Christopher's index finger as he points to the picture symbols while smiling widely	J53a) Participants focus on PCS
Line 54	As we go back to the verse section I verbally remind Christopher that we are going to start from the very beginning	J54a) Repetition of verse J54b) Therapist verbally remind pointing indiv of song form J54c) Participants smile widely
Line 55	At first he does not point to the picture symbols but as soon as he hears what part we are singing he immediately starts to point at the appropriate picture symbols as we sing	J55a) Indiv recognize PCS J55b) Indiv participant directs attention to PCS J55c) Pointing indiv forgets to point to verse section
Line 56	He smiles widely as he points to the picture symbols	J56a) Indiv smiles
Line 57	All participants sing along lively and confidently	J57a) Participants sing with enthusiasm and confidence
Line 58	Lisa points to herself using her thumb, similar to the picture symbol as we sing the word "me"	J58a) Indiv imitate PCS by pointing to herself

Line 59	Christopher forgets to point from the start of the repeat of the verse, instead he turns his back to the board and waves his arms until he realizes he has to point again	J59a) Indiv forgets repeat of the verse section
Line 60	He then finds the appropriate picture symbol and points to it as well continue with the song while the rest of the group continues with the song by singing it correctly	J60a) Indiv directs attention to PCS J60b) Participants Recognize PCS with ease J60c) Participants read PCS by themselves
Line 61	I finish the song with a strong and final strum on the guitar	
9:50		
Line 62	I praise Christopher for helping me	J62a) Therapist verbally affirm indiv
Line 63	I ask who wants to go next	J63a) Therapist invite participant to point PCS
Line 64	Tom volunteers	J64a) Indiv volunteer eagerly to participate
Line 65	I play a short introduction on the guitar	
Line 66	The guitar accompaniment is fast paced and energetic	J66a) Therapist plays energetic and at fast paced tempo
Line 67	I start to sing however none of the participants sing along with me, instead they sit and stare at the board with blunted facial expressions	J67a) Therapist sings alone J67b) Participants Focus on PCS J67c) Blunted facial expressions
Line 68	Tom points to the appropriate picture symbols as I sing	J68a) Indiv directs attention to PCS
Line 69	I stop singing	
Line 70	I verbally invite the rest of the group to sing with me	J70a) Therapist verbally invite participants to sing
Line 71	We sing the song again from the beginning	J71a) Repetition of verse
Line 72	I count to four and we start to sing Lively and with a lot of energy	J72a) Participants sing lively and energetic
Line 73	They attentively watch Tom's index finger as he points to the appropriate picture symbols. Tom himself attentively look at the board	J73a) Participants focus on PCS J73b) Indiv dependent on PCS

Line 74	All participants sing along moderately soft as they sit still and attentively follow Tom's index finger pointing to the appropriate picture symbols however Tom sings the loudest of all the participants. Christopher adjust his upper body in order to see past Tom's body that is covering the board	J74a) Participants focused on PCS J74b) Pointing indiv sing loudest J74c) Participants sing softly J74d) Indiv dependent on PCS to remember words
11:12		
Line 75	Lisa puts up her hand and asks if she can be the next one to point the picture symbols	J75a) Indiv eagerly volunteer to point PCS
Line 76	She jumps up excitedly and goes to the communication board	J76a) Participants body language indicate excitement and eagerness to participate
Line 77	I play a short introduction on the guitar in a fast paced tempo and uplifting and lively mood	J77a) Therapist music is fast paced and lively
Line 78	I verbally invite the rest of the group to sing with me	J78a) Therapist verbally invite participants to sing
Line 79	I count to four and we start to sing the verse section	J79a) Repetition of verse
Line 80	All participants excluding Lisa sing along loud and confidently	J80a) Pointing participant do not sing J80b) Participants sing loudly and with confidence
Line 81	Lisa points to the appropriate picture symbols as we sing the song	J81a) Indiv directs attention to PCS
Line 82	Throughout the verse the participant, including myself, watch Lisa's index finger and the picture symbols she is pointing to attentively while the other participants sing along cheerfully. Tom invites Christopher to song with when Christopher stomps singing for no reason. Tom taps him on his shoulder and verbally invites him	J82a) Therapist and participant focus on pointing indiv J82b) Indiv invite other indiv to sing J82c) Indiv sings the loudest J82d) Participants sing cheerfully
Line 83	Near the chorus section I slow down my guitar strumming to ensure Lisa finds the correct picture symbols to point to	J83a) Therapist slow down music to assist pointing indiv

Line 84	As soon as she finds and starts to point at the picture symbol for the first word of the chorus section which is "hello", I fasten the tempo to the tempo it had been for the verse section	J84a) indiv directs attention to PCS J85a) Therapist speeds up music tempo to fast paced and lively
Line 85	All participants including myself watch her index finger and the picture symbols it is pointing to attentively throughout the chorus section with blunted facial expressions	J85a) Repetition of chorus J85b) Therapist and participant focus on PCS J85c) Blunted facial expressions
Line 86	Before returning to the verse section again, I verbally remind Lisa that she has to start pointing from the very top and beginning of the communication board	J86a) Therapist verbally remind pointing indiv of song form
Line 87	We start singing the first line of the verse	J87a) Repetition of verse
Line 88	Lisa seems confused and only start pointing to the very first picture symbols representing the first line of the verse when we are reach the second line of the verse	J88a) Indiv point to incorrect verse line
Line 89	Near the end of the second verse she catches up and points to the correct and appropriate picture symbol	J89a) Indiv directs attention to correct PCS
Line 90	When we sing the repeat of the verse section she starts pointing on time with the correct picture symbols matching the groups singing	J90a) Pointing indiv match group singing rhythmically when pointing PCS J90b) Indiv directs attention to PCS
Line 91	The participants including myself watch Lisa's index finger and the picture symbols she is pointing to attentively while we sing cheerfully and enthusiastically. Tom sings the loudest of everyone	J91a) Therapist and participants focus on PCS J91b) Participants sing cheerfully and with enthusiasm J92c) Indiv sings loudest
Line 92	Lisa does not sing while pointing	J92a) Pointing indiv does not sing J92b) Pointing indiv focus on PCS
Line 93	I praise Lisa for her help	J93a) Therapist verbally affirm indiv pointing indiv
Session notes	The participants seem to remember the words of the song very well	

	Every participants had a turn to point out the picture symbols and did it very well and accurately
	The song learning part of the session was socially engaging because each member had the opportunity to lead the song by pointing the picture symbols which provided for individual attention and a leadership within the group however all participants, including myself, made very little eye contact with each other
	The participants and myself only looked at the communication board because it was something we were very dependent on the communication board and the picture symbols
	I did not find the opportunity to extend or variety the characteristics of the song because the words of the song are being read on the communication board
	I also did not feel that there was a lot of spontaneous and playful behavior during the song learning section
	I felt musically very limited and stuck and at times even bored

Appendix Y: Thick descriptions K

K	At the circus	
29-Apr-16	Session 3 without pcs Group A	
Time (minutes into session)	Thick description	Code
6:45		
Line 1	I ask the group what the song we have been singing in the previous sessions are about	
Line 2	I start to play the introduction of the song at a moderately slow and calm tempo	K2a) Therapist's music is moderately slow and calm
Line 3	Before I start to sing, Ellen starts to sing the first line. She only sings a few words as she seems unsure if she was supposed to start singing yet	K3a) Indiv spontaneously sing line K3b) Indiv unsure of when to sing K3b) Indiv remembers verse lyrics and melody
Line 4	I praise her for remembering and singing	K4a) Therapist verbally affirms indiv for remembering the lyrics
Line 5	I continue playing the introduction at a moderately slow tempo	K5a) Therapist continue music at a moderate slow tempo
Line 6	I speed up the tempo and we start to sing along together	K6a) Therapist and participants sing together at fast tempo
Line 7	The participants sing along softly while some look at either me or the guitar and some often look around in the room. The sing softly and mumble some of the words. I occasionally make eye contact with the individual participants however their overall energy levels are low and their facial expressions seem blunted	K7a) Participants sing softly K7b) Participants occasionally make eye contact with therapist K7c) Robotic response K7d) Participants remember verse lyrics with ease K7e) Blunted facial expressions

Line 8	When we get to the chorus section, the tempo and lively mood of my playing and singing remains the same as in the verse section. Tshepo gets very excited and taps on his chair a fast and vigorous rhythm for a brief second.	K8a) Music is lively and fast paced K8b) Indiv taps fast and energetic rhythm on his chair
Line 9	I sing along the greetings of the animals but keep quiet when the animal must be named	K9a) Participants invited to sing by themselves
Line 10	The participants manage to remember all the animals we greet in the song in the correct order.	K10a) Participants immediately remember chorus lyrics and melody with ease
Line 11	Tshepo gets very excited and starts to sing loudly	K11a) Indiv expresses emotions of enjoyment and playfulness by singing louder
Line 12	He stomps the chair loudly to the beat of the main pulse of the song a few times and hops in his chair as he does so. He leans forward as to ensure I hear him loud and clearly. He smiles widely as he sing at me	K12a) Indiv participant stomps chair with his hand matching the pulse of the music K12b) Indiv sings loudly animal names in excitement K12c) Indiv smiles widely
Line 13	Albert also hops in his chair for a short while and smiles. Overall the participants are fully engaged and focused on the music They make a healthy amount of eye contact with me and sing with high energy and excitement	K13a) Indiv hops in chair energetically K13b) Indiv smiles K13c) Participants interested and focused on music and therapist K13d) Participants make meaningful eye contact with therapist K13e) Participants sing energetically and excitedly
Line 14	We return to the verse section	K14a) Repetition of verse
Line 15	Tshepo sings along loudly and excitedly while smiling widely and making meaningful eye contact with me	K15a) Indiv express emotions of enjoyment and excitement K15b) Indiv sings loudly K15c) Indiv makes meaningful eye contact with therapist
Line 16	Throughout the repeat of the verse section I gradually speed up the tempo	K16a) Therapist's tempo shift gradually faster K16b) Repetition of verse
Line 17	Tshepo starts to sing louder and hops in his chair again	K17a) Indiv express emotions of enjoyment and excitement K17b) Indiv energetically hops in his chair K17c) Indiv sings louder

Line 18	Near the end of the repeated verse section I end the verse with a short ritardando. The rest of the group adjusts their singing matching the gradual speed increase of my music. They all look at me attentively. Ellen occasionally looks around in the room. All the group members sing all the lyrics correctly with blunted facial expressions except for Tshepo who is smiling at me	K18a) Therapist ends verse with a ritardando K18b) Participants adjust to tempo and dynamic shift with ease K18c) Indiv distracted by objects in the room K18d) Two indiv make eye contact with therapist K18e) Participants remembers verse lyrics and melody K18f) Two indiv blunted facial expressions K18g) Indiv smiles at therapist
7:45		
Line 19	I invite Tshepo to strum the guitar for the verse section	K19a) Repetition of verse K19b) Therapist invite indiv participant to strum guitar
Line 20	He stands up and walks to the guitar	K20a) Indiv is eager to participate
Line 21	He strums the guitar by lightly slapping the guitar strings using four of his fingers	K21a) Indiv slaps guitar strings
Line 22	His strumming is very rhythmical, moderately fast and lively	K22a) Indiv strums guitar physical, moderately fast and lively
Line 23	He also strums the guitar with a lot of force at one point making the sound louder and more vigorous	K23a) Indiv strums with force and loudly
Line 24	He stares at his fingers playing slapping the strings throughout the verse without singing. The tempo gradually goes faster and then slower again but still very fast paced	K24a) Indiv Perseverative strumming K24b) indiv focus on strumming guitar K25c) Indiv strums uneven tempo
Line 25	The rest of the group sing along as he strums the guitar and I press the appropriate chords	K25a) Therapist press chords
Line 26	The rest of the group sing along softly as they seem more interested in watching Tshepo play the guitar than singing. They mumble the words with blunted facial expressions and low energy singing	K26a) Participants sing softly K26b) Participants focus on indiv strumming guitar K26c) Mumbling of words K26d) Blunted facial expressions K26e) Participants low energy singing

Line 27	After we finish the chorus section I thank Tshepo for helping me play the guitar and invite Ellen to strum the chorus section for us	K27a) Repetition of chorus K27b) Therapist verbally affirms indiv for strumming the guitar K27c) Therapist invite indiv participant to strum guitar
Line 28	She stands up and walks to the guitar	K28a) Indiv is eager to participate
Line 29	She gently strums the guitar using her index finger	K29a) Indiv strums guitar gently
Line 30	She strums a very rhythmical beat	K30a) Indiv strums a steady beat
Line 31	Her tempo and character of strumming is very gently and calm	K31a) Indiv strums guitar gentle and calmly
Line 32	The dynamics of her strumming is moderately soft	K32a) Indiv strums moderately soft
Line 33	Her tempo remains the same throughout the chorus section	K33a) Indiv tempo and dynamics of strumming remain consistent
Line 34	Tshepo sing along enthusiastically while Albert sits still and sings very softly. Ellen's strumming grows louder and confidently gradually. Tshepo starts to sing very loudly and taps the main pulse of the music loudly on his chair after I invite Tshepo and Albert to sing more	K34a) Indiv sings along with enthusiasm K34b) Indiv sings very softly K34c) Indiv strumming gradually grows louder and more confidently K34d) Indiv taps main pulse on his chair loudly and energetically K34e) Indiv sings loudly K34f) Therapist invite participants to sing
Line 35	Ellen blunted stares at her finger as she strums the guitar	K35a) Indiv strumming does not sing K35b) Indiv perseverative strumming K36c) Indiv focus on strumming guitar K36d) Strumming indiv blunted facial expression
Line 36	After the chorus section, I invite Albert to strum the guitar for us for the verse section	K36a) Therapist invite indiv participant to strum guitar K36b) repetition of verse
Line 37	Albert strums the guitar using his index finger	K37a) Indiv is eager to participate
Line 38	He strums at an irregular tempo, often unpredictably going slower and then faster	K38a) Indiv strums irregular unpredictable tempo
Line 39	He also strums some of the strings individually and seems to struggle strumming all the strings simultaneously	K39a) Indiv strums single strings occasionally

Line 40	Some of the strings he plucks are very loud and some very soft	K40a) Indiv strums irregular and unpredictable dynamics
Line 41	We sing along and try to keep up with the unpredictable tempo	K41a) Participants struggle to match indiv strumming with their voices
Line 42	His tempo and rhythm changes to a more rhythmical and predictable beat during the second line of the repeated verse section to which the group sings along with easier however they sing very softly and with very low energy	K42a) Indiv strumming gradually grow more steady and predictable K42b) Group match singing with strumming K42c) Participants sing softly K42d) Participants low energy of singing
8:58		
Line 43	I thank Albert for his participation	K43a) Therapist verbally affirms indiv for strumming the guitar
Line 44	As he walks back to sit down I start to strum the guitar vigorously and fast paced	K44a) Therapist strum guitar vigorously and fast paced tempo
Line 45	I sing the verse section loudly and energetically	K45a) Repetition of verse K45b) Therapist sings loudly and with high energy
Line 46	Tshepo sings very loudly, almost shouts the words of the song and energetically hops in his chair while the rest of the group quietly sits up straight in their chairs in anticipation	K46a) Indiv sings loudly and with high energy K46b) Indiv sings with force K46c) indiv express emotions of enjoyment and playfulness K46d) Participants focus on strumming indiv K46e) Indiv hops in his chair excitedly
Line 47	I add a short rest before I play the third and fourth line of the verse section	K47a) Therapist adds musical anticipation
Line 48	When we sing the third and fourth line of the verse section, the tempo is slow and calm to which the participants adjust their singing with ease	K48a) Music shifts to slow and calm K48b) Participants adjust to tempo and dynamic shift with ease
Line 49	We almost whisper the words instead of singing the words	K49a) Participants and therapist sings softly and whisper-like K49b) Participants remember verse lyrics and melody with ease

Line 50	I add another short rest before repeating the verse in the same manner	K50a) Repetition of verse K50b) Therapist adds musical anticipation
Line 51	Tshepo sings along very loudly and hops in his chair	K51a) Indiv respond hops in chairs in excitement K51b) Indiv sings loudly and energetically
Line 52	Ellen slowly rocks her upper body from one side to the other during the entire verse section	K52a) Indiv slowly rocks upper body
Line 53	Albert hops often in excitement	K53a) Indiv excitedly hops in chair energetically
Line 54	All participants sing along with enthusiasm and excitement in their voices, Tshepo shouts the lyrics instead of singing it. The participants make eye contact with me and each other regularly and smile widely	K54a) Participants sing with excitement and enthusiasm K54b) Participants remember verse lyrics and melody with ease K54c) Participants body language indicates excitement and eagerness to participate K54d) Participants make meaningful eye contact with therapist and each other K54e) Participants smile widely
Line 55	I continue to the chorus section	K55a) Repetition of chorus
Line 56	The tempo is calm and moderately slow with a combination of plucking and strumming on the guitar	K56a) Therapist's music is moderately slow and calm
Line 57	Tshepo sing along very loudly and almost shouts the words of the song	K57a) Indiv shouts words loudly K57b) Indiv remembers chorus lyrics with ease
Line 58	I gradually increase the tempo of the music near the end of the chorus to a more lively character at a moderately fast tempo to which the participants adjust their singing with ease. Tshepo sings the loudest in a high pitched and playful voice	K58a) Therapist gradually shifts music to a faster paced tempo to moderately fast and lively K58b) Participants adjust to tempo and dynamic shift with ease K58c) Indiv sing in high pitched and playful and silly voice
9:45		
Line 59	I explain to the group that we are now going to make the sounds of the animals we greet instead of naming them	

Line 60	I ask the group what an elephant sounds like; Tshepo immediately makes a trumpeting sound	K60a) Therapist ask participants what the animal sounds like K60b) Indiv spontaneously models vocal sound
Line 61	I praise him for his participation	K61a) Therapist verbally affirms indiv for imitating an animal sounds
Line 62	We start singing the chorus section	K62a) Repetition of chorus
Line 63	We sing at a moderately slow and calm pace	K63a) Music is moderately slow and calm K63b) Therapist and participants sing moderately slow and calm
Line 64	When we get to the part where we have to sing the word "elephant", I am the only one to make the trumpeting sound of an elephant instead	K64a) Therapist imitates animal sound alone
Line 65	Tshepo was the only one who joined me with making the animal sounds at first however Albert joined in and made movements using his hands when we greeted Mr. Horse.	K65a) Indiv participant make animal vocal sounds with therapist K65b) Other indiv join therapist and indiv with vocal imitation of animal sound K65c) Indiv imitate physical movements associated with animal in song
Line 66	Tshepo copied Albert's movement of pretending to have hooves like a horse when we sing hallo to Mr. Horse. Tshepo loudly imitates the sound of a horse while smiling widely. Albert also smiles widely	K66a) Indiv imitate other indiv physical movements associated with animal in song K66b) Indiv participants make meaningful eye contact with therapist and other indiv K66c) Two indiv smile widely K66d) Two indiv participate with enthusiasm and high energy
Line 67	The participants, especially Tshepo, roared like grizzly bears enthusiastically along with hand movements imitating that of grizzly bears claws	K67a) Indiv imitate physical movements associated with animal in song K67b) Indiv imitate vocal sound of animal
Line 68	The last animal we greeted was Mr. Snake	

Line 69	We made a hissing sounds and Tshepo shouted out loudly "snake". All the participants made a healthy amount of eye contact with me and each other	K69a) Indiv immediately remember chorus lyrics K69b) Participants emphasize "s" vocal sound K69c) Participants makes meaningful eye contact with therapist and each other
Line 70	We repeated this activity again but this time Tshepo was the only participant to sing loudly and do his own snake movements energetically	K70a) Repetition of chorus I K70c) Indiv imitate vocal sounds loudly and energetically
Line 71	Ellen sang softly and Albert occasionally made hand movements as he sang very softly with blunted facial expressions however all participants made regular eye contact with me	K71a) Indiv sing softly K72b) Indiv occasionally make hand gestures K72c) Two indiv blunted facial expressions K72d) Participants makes meaningful eye contact with therapist
10:43		
Line 72	I move to the verse section again	K72a) Repetition of verse
Line 73	The guitar accompaniment is a combination of picking and strumming at a lively and moderately fast tempo	K73a) Therapist's guitar accompaniment is lively and moderately fast
Line 74	All participants sing along with me	
Line 75	The sing softly but all the words are clearly pronounced and al are looking at me	K75a) Participants sing softly K75b) Participants remember verse lyrics with ease K75c) Participants make meaningful eye contact with therapist K75d) Participants pronounce words clearly
Line 76	I modulate to a different key for the repeat of the verse section	K76a) Repetition of verse K76b) Therapist modulates to different key
Line 77	The participants adjust with ease to the new key	K77a) Participants adjust to tempo and dynamic shift with ease
Line 78	I gradually increase the tempo of the music to which the participants sing along with ease as well	K78a) Therapist gradually fastens the tempo K78b) Participants adjust to tempo and dynamic shift with ease
11:30		

Line 79	I invite the participants to sing the song for a last time with me	K79a) Repetition of verse K79b) Therapist invite indiv participant to sing
Line 80	I explain to them that at the chorus section twice as we will sing the greetings of the animals and then during the repeat we will imitate the sounds they make	K80a) Therapist verbally explain that lyrics change to animal vocal sounds
Line 81	I play a short introduction to the song at a lively and moderately fast tempo	K81a) Therapist's music is lively and moderately fast paced
Line 82	All the participants sing along in the same manner during the verse section however they sing with blunted facial expressions and look around the room almost seeming bored. The quality of their singing is low in energy and the words are mumbled however one can hear that they do not know the lyrics well	K82a) Participants sing lively K82b) Participants remember verse lyrics K82c) Blunted facial expressions K82d) Participants seem distracted by objects in the room K82d) Participants flat quality of singing K82e) Mumbling of words K82f) Therapist uses body language to indicate musical cues
Line 83	When we get to chorus section, the tempo and character of the song remains the same as in the verse section	K83a) Repetition of chorus K83b) Tempo and dynamics remains consistent
Line 84	The participants sing along softly and monotonic	K84a) Participants sing softly K84b) Participants monotonic singing
Line 85	Tshepo misunderstands my instructions and imitates the sounds of the animals at first with a lot of enthusiasm and confidence while the rest of the group sings the animal names softly with blunted facial expressions while Tshepo smiles widely	K85a) Indiv misunderstand therapist instructions to sing animal names K85b) Indiv imitate vocal sound of animal K85c) Indiv imitates vocal sound with confidence K85d) Participants sings softly K85e) Participants blunted facial expressions K85f) Indiv smiles
Line 86	I decide to not correct him as he is doing it very enthusiastically and appears to be enjoying imitating the sounds and jumps up to do matching hand movements along with his sounds	K86a) Indiv participants body language indicate excitement and eagerness to participate K86b) Indiv participant jumps up in excitement K86c) Indiv imitates animal movement energetically

Line 87	When we get to the repeat of the chorus section I verbally remind the participants that we are now going to imitate the sounds of the animals instead of singing their names	K87a) Repetition of chorus K87b) Therapist verbally remind participants of lyrical changes to vocal sounds for chorus
Line 88	When we greet the first animal Tshepo imitates an elephant very well energetically and with confidence however Albert and Ellen seem confused and sang the elephants name very softly and unsure of what to do	K88a) Two participants confused about lyrical change K88b) Indiv participant respond to music through high energy and confident physical movement K88c) Two participants softly sing K88d) Two indiv unsure of instructions to imitate animal vocal sounds K88e) Indiv makes vocal imitation of animal sounds
Line 89	I continue to strum the guitar but ask Ellen to show me how an elephant makes and what it sounds like	K89a) Therapist invite indiv to imitate animal vocal sound
Line 90	She makes a loud and slow trumpeting sound as she lifts her right arm in the air imitating the trunk of an elephant as she makes eye contact with me	K90a) Indiv eagerly responds with physical and vocal imitation of animal K90b) Indiv makes eye contact with therapist
Line 91	I acknowledge and praise Ellen for her participation	K91a) Therapist verbally affirms indiv for imitation of an animal sound
Line 92	We greet the next animal which I then sing is a horse	
Line 93	I verbally invite the participants to show me their best imitations of a horse	K93a) Therapist invite participants to make vocal imitations of animals
Line 94	They all imitate the sound of a horse loudly, especially Tshepo, while they add arm movements imitating a horse kicking	K94a) Participants eagerly answer therapist with physical and vocal imitations of animals in the song K94b) Indiv imitates vocal sounds very loudly
Line 95	I do the exact same with the next animal which is a grizzly bear	K95a) Participants respond with physical movements and vocal imitations of animal in song

Line 96	The participants growl loudly and claw with their hands in the air as if their hands are bear claws. The overall energy in the room has shifted to a more engaging and energetic level. Tshepo smiles widely at me while Albert and Ellen looks at me with blunted facial expressions however their vocal sounds are done with confidence and high energy	K96a) Participants take part in activity with enthusiasm and over exaggerated vocal sounds K96b) Indiv smiles K96c) Participants blunted facial expressions K96d) Participant vocal imitations are done loudly and with confidence K96e) Participants engage with high energy
Line 97	The last animal is Mr. Snake to which they imitate hissing sounds; Tshepo frowns as he over exaggerates the hissing sound of a snake. He makes meaningful eye contact with me.	K97a) Participants exaggerates imitation of vocal animal sound playfully K97b) Indiv frowns K97c) Indiv makes meaningful eye contact with therapist
Line 98	I praise them for their accurate animal sounds and continue to the verse section	K98a) Therapist verbally affirms participants for accurate vocal imitation of animal sounds K98b) Repetition of verse
Line 99	The first line I play lively but at a moderately fast pace	K99a) Therapist's music is lively and moderately fast paced
Line 100	The second line I play vigorous, loud and in a very fast tempo to which the participants sing along with ease. They look at me attentively while singing all the word accurately and melodically however their quality of voice is low in energy	K100a) Therapist shifts music to vigorous strumming and singing at a fast paced tempo K100b) Participants remember verse lyrics K100c) Participants adjust to tempo and dynamic shift with ease K100d) Participants make meaningful eye contact with therapist K100e) Participants focus on therapist K100f) Participants remembers melody K100g) Participants sing with low energy
Line 101	I add a sudden rest after the second line	K101a) therapist adds anticipation
Line 102	The participants sing along and adjust their quality of voices accordingly to the character, tempo and dynamics of the guitar strumming and my quality of voice	K102a) Participants adjust to tempo and dynamic shift with ease

Line 103	I continue with the rest of the song in the same manner, ending the last line with a short ritardando to which the participants adjust the tempo of their singing accordingly. We are interrupted by a teacher coming into the room and talking to me to which the participants look at her during the last line	K103a) Therapist ends song with a ritardando K103b) Participants adjust to tempo and dynamic shift with ease K103c) Participants distracted by outside element
Session notes	Overall all participants participated in every part of the song learning section of the session	
	Tshepo brought an energetic quality to the group which helped me a lot as two of the other participants were absent from school that day	
	The participants made a healthy amount of eye contact with each other and myself	
	The sound of the animals they had to imitate facilitated social engagement with each other as they looked at each other and copied each other's body movements and sounds	
	I was able to use the music in a more flexible manner by changing the tempo and dynamics as well as to modulate and play around with the character and overall mood of the music	
	This allowed us to create different versions of the song and the making sure the repetition of the same song remained exciting and interesting	

Appendix Z: Thick descriptions L

L	At the circus	
29-Apr-16	Session 3 with pcs Group B (Only Lisa and Tom attended)	
Time (minutes into session)	Thick description	Code
8:13		
Line 1	I ask the participants if they can remember the song we sang in the previous session	L1a) Therapist ask participants a question about song
Line 2	Lisa points to the board and say some of the words whose picture symbols are on the communication board out loud. Tom spontaneously and clearly starts saying the first line of the verse section as I point to the picture symbols	L2a) participants directs attention to PCS L2b) Participants immediately remembers PCS with ease L2c) Participants focus on PCS L2d) indiv spontaneously say words L2e) Indiv pronounce words clearly
Line 3	I start to sing at a moderately fast tempo as I point at the picture symbols matching the words of the song	L3a) Therapist directs attention to PCS L3b) Therapist sings at a moderately fast paced tempo
Line 4	Tom and Lisa sing with me, Tom mumbles the words but sing louder than Lisa. Lisa starts drinking water. Both attentively stare at the board with blunted facial expressions and participation has a very low in energy	L4a) Indiv sings louder L4b) Indiv mumbles words L4c) Indiv distracted with water bottle L4c) Blunted facial expressions L4d) Participants engage with low energy
Line 5	I ask her to finish and then take both Tom and Lisa's water bottles away	L5a) Therapist removes distractions
Line 6	I explain to them that they can drink water after the session	
Line 7	I continue to the chorus section	
Line 8	I ask the participants what animal do we greet first	

Line 9	Tom shouts out enthusiastically "elephant". Lisa immediately shouts out "hello" as she reads on the board. Lisa waves at the board as she says hello	L9a) Indiv immediately remembers word with ease L9b) Indiv participates with excitement L9c) Indiv remembers PCS with ease L9d) Indiv participant imitates PCS by waving hello
Line 10	I praise him as I stick the picture symbol of an elephant on the board. While I stick the picture symbol on the board, Lisa loudly and playfully imitates the sound of an elephant and waves her arm like a trunk of an elephant while smiling. While Lisa imitate an elephant, Tom shouts out loud the next animal being greeted	L10a) Therapist verbally give praise to participant L10b) Therapist directs attention to PCS L10c) Indiv predicts animal being greeted L10d) Indiv participant imitate the trunk of an elephant L10e) Indiv imitate vocal sound of animal being greeted L10f) Indiv imitate sound loudly and playfully L10g) Indiv smiles
Line 11	I start to sing the second line for the second animal being greeted and when the part comes where the animal must be named, I keep quiet and allow the participants to sing the animals names, which they did confidently and loudly. I sing moderately slowly without guitar accompaniment. The participants seem eager and excited to participate. Lisa smiles widely as she sings with me	L11a) Therapist invites participants to read PCS by themselves L11b) Participants remember word L11c) Therapist direct attention to PCS L11d) Participants sing with confidence and loud L11e) Therapist sings moderately slow L11f) Participants body language indicate eagerness and excitement to participate L11g) Indiv smiles
Line 12	I do the same with the third animal	L12a) Therapist invite participants to remember words by themselves
Line 13	Tom sings loudly "grizzly bear" as he swings his arms and hands in the air, pretending to have claws like a grizzly bear	L13a) Indiv participant imitate movement of a grizzly bear L13b) Indiv sings loudly L13c) Participants immediately remembers words L13d) Therapist directs attention to PCS
Line 14	The last animal I help the group by putting emphasis on the "s" sound in snake. Before singing the animal's name, Tom shouts out the name of the animal spontaneously and with high energy to which Lisa excitedly agrees with him by also shouting out the animal's name. Both Tom and Lisa make eye contact with me and only occasionally look at the board	L14a) Therapist emphasize "s" sound L14b) Indiv remembers lyrics from memory L14c) Participants smile L14d) Participants make meaningful eye contact with therapist L14e) Group agrees with intended PCS meaning

Line 15	The participants made hissing sounds and shouted out the word "snake" excitedly and with high energy and engaging body language by sitting slightly bent forward	L15a) Participants imitate therapist vocal sound L15b) Participants participate with high energy and excitement L15c) Participants body language indicates eagerness to participate
Line 16	Tom imitated a snake slithering using both his arms	L16a) Indiv imitates PCS of slithering snake
Line 17	I fetch my guitar	
Line 18	I asked Tom to do the pointing to picture symbols for Lisa and I	L18a) Therapist invite indiv participant to point PCS
Line 19	I play a short introduction and we start to sign the verse of the song lively and cheerful at a moderately fast paced tempo	L19a) Repetition of verse L19b) Therapist's music is lively and cheerful L19c) Therapist's music is a moderately fast paced tempo
Line 20	Tom sings loudly but sometimes stomps singing as he is focusing on pointing at the picture symbols	L20a) Pointing indiv sings loudly L20b) indiv distracted by directing to PCS
Line 21	Lisa sing very softly and in the middle of the verse stomps singing at all	L21a) Indiv sings softly L21b) Indiv stomps singing mid-verse
Line 22	The music was lively and moderately fast paced however no eye contact is being made between myself and the participants as we all attentively stare at the board with blunted facial expressions	L22a) Music is lively and moderately fast L22b) Therapist and participants focus on PCS L22c) No eye contact between therapist and participants L22d) Blunted facial expressions
Line 23	I stop the music before we continue with the chorus section to verbally invite Lisa to sing along with me	L23a) Therapist pauses music L23b) Therapist verbally invite indiv participant to sing
Line 24	I play a short introduction on the guitar and we start with the chorus section at a moderately fast tempo	L24a) Repetition of chorus L24b) Therapist plays moderately fast
Line 25	Tom sings along with me loudly while he points at the board however Lisa only stares at the board and occasionally at me with a blunted facial expressions	L25a) Pointing indiv sings with therapist loudly L25b) Sitting indiv has blunted facial expression L25c) Sitting indiv does not sing L25d) Pointing indiv directs attention to PCS
Line 26	When we greet Mr. Elephant Lisa lifts up her arm and imitates the trunk of an elephant enthusiastically	L26a) Indiv participant imitate the trunk of an elephant L26b) Indiv enthusiastically participate

Line 27	She also makes a trumpeting sound while smiling and making meaningful eye contact with me	L27a) Individ imitate vocal sound of animal being greeted L27b) Individ smiles L27c) Individ makes meaningful eye contact with therapist
Line 28	We continue to greet the rest of the animals with only Tom and I singing, Lisa occasionally softly sing with us and stares at the board	L28a) Therapist and pointing individ sing together L28b) Individ sings softly L28c) Individ focus on PCS
Line 29	I occasionally have to verbally invite Tom to sing as well	L29a) Therapist verbally invite pointing individ to sing
Line 30	We move to the verse section	L30a) Repetition of verse
Line 31	Only Tom sings very loudly and energetic with me while he points to the picture symbols on the board. The music is lively and fast however both Lisa and Tom and myself look at the board with blunted facial expressions	L31a) Pointing individ sings loudly and energetic with therapist L31b) Individ direct attention to PCS L31c) Therapist blunted facial expression L31d) Participants blunted facial expressions
Line 32	At the second line of the verse I fasten the tempo gradually until we reach the end of the verse singing very loud and at a very fast paced tempo. Lisa gives a giggle when I finish the verse and smiles at me warmly	L32a) Therapist gradually speeds up to a fast pace L32b) Music gradually grows louder L32c) Individ giggles and smiles L32d) Individ makes meaningful eye contact with therapist
Line 33	I then invite Lisa to come to the communication board and to point the picture symbols for the song	L33a) Therapist invite individ participant to point PCS
Line 34	She enthusiastically agrees and walks to the communication board	L34a) Individ eager to direct attention to PCS
Line 35	I play a short introduction on the guitar with a lively and energetic quality to it	L35a) Therapist play guitar lively and energetic
Line 36	The tempo was moderately fast paced	L36a) Tempo of music is moderately fast L36b) Repetition of verse
Line 37	Tom sang with me very loudly and enthusiastically as he swung his legs to the rhythm of the music. His quality of voice is energetic and lively	L37a) Participants swings legs fast L37b) Individ sings loudly and with enthusiasm L37c) Individ sings energetic and lively
Line 38	Lisa pointed the picture symbol correctly and on time as we sang in a fast pace	L38a) Individ accurately direct attention to PCS

Line 39	Lisa did not however sing at all but focus very hard on pointing to the correct picture symbols	L39a) Pointing indiv does not sing L39b) Pointing indiv focus on PCS
Line 40	At the chorus section the first line and greeting of the first animal stayed softly and still fast paced but a bit slower than the verse section	L40a) Repetition of chorus L40b) Music is slow paced and sung softly by therapist and participants
Line 41	Throughout the first line the dynamics changed gradually to louder and louder	L41a) Dynamics gradually shift to louder and faster paced
Line 42	Tom sang the rest of the chorus section loudly with me, imitating a horse movement using his hands as hooves kicking in the air	L42a) Indiv and therapist sing loudly together L42b) Indiv imitates the movement of a horse
Line 43	Lisa continued to point to the appropriate picture symbols as we sang	L43a) Indiv directs attention to PCS
Line 44	When we returned to the verse section I fastened the tempo gradually to a very fast and lively tempo	L44a) Repetition of verse L44b) Therapist gradually shift music to a lively and fast pace
Line 45	Lisa smiled as she tried to keep up with the pointing to the picture symbols	L45a) Pointing indiv smiles L45b) Indiv directs attention to PCS
Line 46	Tom sang along and swung his legs vigorously	L46a) Sitting indiv respond with high energy movements L46b) Sitting indiv sing loudly L46c) Participants adjust to musical shift with ease
Line 47	During the repeat of the verse I added a sudden rest and created a sense of anticipation	L47a) Repetition of verse L47b) Therapist add musical anticipation
Line 48	Lisa smiled at me as she waits for me to finish the verse	L48a) Pointing indiv smiles L48b) Pointing indiv curious of music L48c) Indiv makes meaningful eye contact with therapist
Line 49	Tom swung his legs vigorously until the very end of the verse	L49a) Sitting indiv participant responds with high energy movements
Line 50	Lisa did her best to keep up with the pointing to the picture symbols and managed to keep up very well	L50a) Indiv correctly directs attention to PCS L50b) Pointing indiv adjust to unpredictable tempo change
11:56		

Line 51	I explain to the group that we are going to sing the song again but this time nobody will be pointing to the picture symbols on the communication board and the must read it by themselves	L51a) Therapist verbally invite participants to read PCS by themselves
Line 52	I play a short introduction on the guitar and count to four	L52a) Therapist play short introduction
Line 53	As I count to four Lisa counts on her fingers with me	L53a) Indiv counts to four with therapist
Line 54	We start to sing the verse. Lisa continues to point to the picture symbols despite me asking her to not point	L54a) Repetition of verse L54b) Indiv directs attention to PCS
Line 55	The guitar strumming is lively, fast paced and energetic	L55a) Therapist's strumming is lively, fast paced and energetic
Line 56	All participants sing along enthusiastically	L56a) Participants sing with therapist with enthusiasm L56b) Participants sing fast paced and lively
Line 57	As we get to the third line of the verse section, I speed up the tempo and strum more vigorously	L57a) Therapist strums guitar vigorously and sings at a fast pace
Line 58	The participants sing louder and energetically. Tom does not look at the board at all, he seem to remember the lyrics from memory. Instead he looks at Lisa and me while smiling widely. Lisa sings along but attentively focus on pointing to the correct picture symbols while also smiling widely	L58a) Participants quality of voice adjust and match to musical shift with ease L58b) Participants sing fast paced, energetic and loud L58c) Indiv remembers lyrics from memory L58d) Indiv makes meaningful eye contact with therapist and participant L58e) Indiv smiles widely L58f) Indiv directs attention to PCS L58g) Indiv focus on PCS
Line 59	Tom swings his legs	L59a) indiv respond with high energy movements
Line 60	I pause the music for a short while after the first verse	L60a) Therapist pause music
Line 61	We sing the repeat of the verse in the similar manner except I add a sudden short pause after the second line of the verse	L61a) Repetition of verse L61b) Music is lively energetic and fast paced L61c) Therapist add unpredicted anticipation
Line 62	I create a sense of anticipation when I suddenly continue with the song by singing louder and strumming vigorously at a fastened tempo	L62a) Therapist strum guitar and sings vigorously at a fast tempo

Line 63	Lisa and Tom sing along loudly and enthusiastically. They occasionally look at the board however they seem more interested and curious to see how the music will change	L63a) Participants sing loudly and excitedly L63b) Participants less dependent on PCS L63c) Participants interest and focus on therapist and music L63d) Participants make meaningful eye contact with therapist
Line 64	Lisa occasionally points to the picture symbols on the communication board	L64a) Indiv occasionally directs attention to PCS
Line 65	Tom seems to remember the words of the song by memory	L65a) Indiv remember lyrics by memory
Line 66	We continue to the chorus section	L66a) Repetition of chorus
Line 67	Between each greeting of each animal I add anticipation	L67a) Therapist adds unpredictable anticipations between verses
Line 68	In response to the sudden rests in the music, Tom swings his legs vigorously and energetic and Lisa sings along and points to the picture symbols on the communication board. They both look at me and my guitar curiously while smiling widely and giggling in between the verses	L68a) indiv respond with high energy movements L68b) Other indiv occasionally directs attention to PCS L68c) Two indiv participants cheerfully sings with therapist L68d) Participants focus on therapist and seem curious of music L86e) Participants smile L86f) Participants adjust to musical shifts and sudden pauses with ease L86g) Participants makes meaningful eye contact with therapist
Line 69	Tom sings along very loudly	L69a) Indiv sings loudly
Line 70	We sing the verse section again	L70a) Repetition of verse
Line 71	The first two lines we sing fast paced and lively	L71a) music is fast paced and lively
Line 72	The last two lines of the song I slow down the tempo and dynamics of the music to a clam and almost lazy type of playing and singing	L72a) Therapist shifts music suddenly to slow tempo and soft and calm character L72b) Therapist sings and strums lazily
Line 73	The participants stop singing as soon as the music slows down and I have to verbally invite them to sing with me	L73a) Participants does not adjust well to sudden musical shift L73c) Therapist verbally invite participants to sing

Line 74	They do however rock their upper bodies from one side to the other to the main pulse of the song while attentively looking at me	L74a) Participants rock bodies to pulse of music L74b) Participants focused on therapist L74c) Participants make meaningful eye contact with therapist
Line 75	The same happens with the second repeat of the verse however even during the parts where the music is fast paced and lively, none of the participants sing along	L75a) Participants does not adjust well to sudden musical shift L75b) Repetition of verse L75c) Therapist's music is fast paced and lively
Line 76	The rock their upper bodies from one side to the other to the main pulse of the song	L76a) Participants rock bodies to pulse of music
13:39		
Line 77	I verbally invite Lisa to help me strum the guitar	L77a) Therapist invite indiv participant to strum guitar
Line 78	I show her how to strum the guitar using her index finger	L78a) Therapist models guitar strumming
Line 79	She started strumming a very basic but rhythmical and steady rhythm at a moderately fast and lively tempo. Lisa attentively focus on the guitar	L79a) Indiv strum guitar rhythmically with steady beat L79b) Indiv strumming is lively and moderately fast L79c) Indiv focus on strumming guitar
Line 80	I counted to 4 and we started to sing along at Lisa's strumming pace	L80a) therapist verbally count music in L80b) Participants and therapist sing together matching indiv strumming
Line 81	Tom sang very loudly, occasionally clapping his hands on the rhythm	L81a) Sitting indiv sings loudly L81b) Indiv participant occasionally claps hands matching the pulse of the music
Line 82	Lisa kept the same beat for the entire verse	L82a) Indiv strums beat steady
Line 83	I then invited Tom to strum the guitar for the repeat of the verse section	L83a) Therapist invite indiv participant to strum guitar L83b) Repetition of verse
Line 84	Tom jumped up and started strumming the guitar vigorously, fast and loud	L84a) Indiv body language indicate excitement and eagerness to participate L84b) Indiv strums guitar with force and at a presto tempo L84c) Indiv engages with high energy

Line 85	His strumming was less steady as he was almost lightly hitting the strings using both his hands	L85a) Indiv tempo and rhythm of strumming is disorganized and unpredictable L85b) Indiv use all fingers of both hands to strum guitar
Line 86	Lisa did not sing at all, instead she attentively looked Tom as he strums the guitar vigorously and laughed out loud. I struggle to match his strumming with my singing but manage at times	L86a) Therapist struggle to match indiv music with voice L86b) Sitting indiv focus on other indiv strumming L86c) Sitting indiv smiles and laughs loudly L86d) Sitting indiv does not sing
Line 87	I sang along the chorus section by matching his strumming with my voice	L87a) Repetition of chorus L87b) Therapist match indiv strumming with voice L87b) Therapist sings loud and with force
Line 88	I invited Lisa to strum the guitar again	L88a) Therapist invite indiv participant to strum guitar L88b) Repetition of verse
Line 89	She played in the same steady and rhythmical manner she had played before. Lisa attentively look at her finger as she strums the guitar. She does not sing with	L89a) Indiv strum guitar rhythmically with steady beat L89b) Indiv strumming is lively and moderately fast L89c) Strumming indiv focus on strumming
Line 90	Tom enthusiastically sang with me loudly and with high energy. He attentively looks at me and Lisa's playing while smiling widely and seems to remember all the lyrics from memory.	L90a) Sitting indiv sing with therapist with enthusiasm and energetically L90b) Sitting indiv makes healthy eye contact with therapist L90c) Sitting indiv focus on other indiv strumming L90d) Sitting indiv remembers lyrics from memory L90e) Sitting indiv smiles widely
Line 91	I praised Lisa for helping me and she went back to her chair	L91a) Therapist verbally affirm indiv
Line 92	I moved directly into the goodbye song	
Session notes	The song learning part went well to an extent	
	The participants remembered the words quite well and were able to point to the correct picture symbols on time on the communication board however I struggled with the participation of the participants	

	Unfortunately only two of the members of the group were at school that day (Tom and Lisa)
	Lisa had to constantly be verbally invited to sing and participate verbally
	She would sing one line of the song and then stop singing for the rest of the verse
	Tom sang very loud and sometimes might have overpowered Lisa's singing
	Tom and Lisa were both very eager to point the picture symbols on the board and to strum the guitar
	They both were able to adjust their pointing to picture symbols according to the tempo of the music which I changed often and without warning

**Appendix AA: Recollection of song**

Table 1

Recollection of song					
<u>Forgetting of song form</u>	<u>Forgetting of song form</u>	<u>Remembering of song form</u>	<u>Remembering song form</u>	<u>Remembering of song theme</u>	<u>Remembering of song theme</u>
E114a) Pointing indiv does not go back to verse section			G40d) Indiv remembers song form	H102a) Indiv remembers song theme	I2a) Indiv immediately remembers song theme
E121b) Indiv does not go back to verse section					
H97b) Indiv forgets to repeat verse section					
H101a) Indiv forgets to point to chorus section					
H104a) Indiv participant forgets to point chorus section					
J55c) Pointing indiv forgets to point to verse section					

J59a) Indiv forgets repeat of the verse section					
J88a) Indiv point to incorrect verse line					

### Appendix AB: Recollection of lyrics

Table 1

Recollection of lyrics					
<u>Remembering of lyrics</u>	<u>Remembering of lyrics</u>	<u>Recollection of emphasized lyrics</u>	<u>Recollection of emphasized lyrics</u>	<u>Participant predict words</u>	<u>Participant predict words</u>
C81a) Participants remember most lyrics from memory	B94a) Indiv participant remembers verse words		B35c) Participants remember emphasized words in verse most	J17a) Indiv predicts words incorrect	
E79c) Participants remember lyrics from memory	B119a) Participants remember most lyrics by memory of verse		B48a) Participants remember emphasized words in verse	J21a) Indiv predicts words correct	
E138b) Remember lyrics from memory	G32f) Participants remembers chorus lyrics and melody with ease		B58b) Participants remember emphasized words in chorus	L10c) Indiv predicts animal being greeted	

L14b) Indiv remembers lyrics from memory	G40e) Indiv remembers chorus melody and lyrics		B85b) Participants remember emphasized words of chorus		
L58c) Indiv remembers lyrics from memory	G43a) Indiv immediately remembers chorus lyrics		B95c) Participants remember emphasized words of verse		
L65a) Indiv remembers lyrics by memory	G46c) Participants remembers chorus lyrics and melody with ease		B114b) Participants remembers emphasized words of verse		
L90d) Sitting indiv remembers lyrics from memory	G50a) Participants remembers chorus lyrics		D8b) Participants remember emphasized words of verse		
	G62b) Participants remembers verse lyrics with ease		D22a) Two participants remembers emphasized words of verse		
	G72b) Participants remembers verse melody and lyrics with ease		D33b) Indiv remembers emphasized words of verse		
	G78b) Participants remember chorus lyrics and melody with ease		D35b) Participants remember emphasized words of verse		

	G84c) Participants remembers chorus melody and lyrics very well		D53b) Indiv remembers emphasized words of verse		
	D2a) Indiv participant immediately verse remembers lyrics		D99a) Different participants remembers emphasized words of verse		
	D16b) Indiv remembers chorus lyrics		D117c) Participants remembers emphasized words of chorus		
	D41a) Indiv participant immediately remembers chorus lyrics		D123b) Participants Remembers emphasized words of verse		
	D46a) Indiv participant immediately remembers chorus words		D129d) Participants remember emphasized lyrics of verse		
	D68c) Indiv remembers verse lyrics		D163d) Participants remembers emphasized words of chorus		
	D81c) Indiv remembers chorus words		F101c) Participants remember emphasized words of chorus		

D113b) Indiv remembers chorus lyrics				
D145b) Indiv remembers chorus lyrics				
D132d) Indiv remembers verse words				
D151a) Participants immediately remember verse words				
D154b) Indiv participant remembers verse lyrics and melody				
D160e) Indiv remembers verse lyrics				
D167c) Indiv remembers chorus lyrics				
D173b) Participants immediately remember verse				

	words				
	F3a) Indiv remembers word from chorus				
	F6c) Participants remembers verse melody and lyrics with ease				
	F12a) Two indiv remembers chorus lyrics with ease				
	F17b) Participants remembers chorus lyrics and melody with ease				
	F37a) Indiv remembers chorus lyrics				
	F50c) Participants remembers verse lyrics and melody				
	F76b) Participants remembers verse melody and lyrics with ease				

	F83b) Indiv remembers verse lyrics				
	F91a) Participants remembers chorus melody and lyrics with ease				
	F105a) Participants immediately remembers verse melody and lyrics with ease				
	F127a) Participants remembers chorus melody and lyrics with ease				
	F133c) Indiv remembers chorus melody and lyrics with ease				
	F148a) Participants remember chorus lyrics and melody with ease				
	F149a) Participants remembers chorus lyrics with ease				

	I6b) Participants remembers most verse lyrics well				
	I13c) Participant remembers verse lyrics				
	I16b) Indiv remembers chorus melody and lyrics				
	I19b) Indiv remembers chorus lyrics and melody				
	I20b) Participants remembers chorus melody and lyrics				
	I22b) Indiv remembers chorus melody and lyrics				
	I25d) Indiv remembers chorus lyrics				
	I27a) Participants remember chorus lyrics				

I46d) Participants remembers chorus melody and lyrics				
I53c) Participants remembers verse melody and lyrics well				
I58c) Participants remembers chorus melody and lyrics very well				
I81b) Participants remembers chorus lyrics				
I89b) Participants remembers verse melody and lyrics				
I99c) Participants remembers chorus melody and lyrics by themselves				
I100a) Participants remember chorus lyrics by themselves				
I105a) Participants remember verse				

	lyrics with ease				
	I108b) Participants remember chorus lyrics with ease				
	K3b) Indiv remembers verse lyrics and melody				
	K7d) Participants remember verse lyrics with ease				
	K10a) Participants immediately remember chorus lyrics and melody with ease				
	K18e) Participants remembers verse lyrics and melody				
	K49b) Participants remember verse lyrics and melody with ease				
	K54b) Participants remember verse lyrics and melody				

	with ease				
	K57b) Individ remembers chorus lyrics with ease				
	K69a) Individ immediately remember chorus lyrics				
	K75b) Participants remember verse lyrics with ease				
	K82b) Participants remember verse lyrics				
	K100b) Participants remember verse lyrics				

Table 2

Recollection of lyrics					
<u>Lyrics forgotten</u>	<u>Lyrics forgotten</u>	<u>Recollection of words with PCSS absent</u>	<u>Recollection of words with PCSS absent</u>	<u>Forgetting of words with absent PCS</u>	<u>Forgetting of words with absent PCS</u>

	B87a) Participants forgets first animal greeted	C14c) Participants remember words with PCS absent		A60b) Participants forget words with PCS absent	
	D112b) Indiv forgets order of animals being greeted, shouts out wrong animal	E8b) Participants remember words with absent PCS		E47b) Indiv forget words with PCS absent	
	D138c) Participants forgets order of animals being greeted, shouts out wrong animal names	H63a) Indiv participant immediately remember words with absent PCS		J14a) Participants forget word with absent PCS	
	D139a) Indiv forgets order of animal being greeted, shouts out wrong animal name	J7a) Participants remember words with absent PCS			
		J14b) Indiv participant immediately remembers word with absent PCS			

Table 3

<b>Recollection of lyrics</b>			
<u>Unsure of lyrics</u>	<u>Unsure of lyrics</u>	<u>Recollection of previous</u>	<u>Recollection of previous</u>

		<u>song lyrics</u>	<u>song lyrics</u>
A48d) Participants unsure about the words	B32b) Participants unsure of chorus words	H45c) Indiv participant immediately remember words of previous song	G9a) Participants immediately remember lyrics similar to previous song
A65a) Participants unsure of words	B35a) Participants unsure of verse words	H63c) Indiv remembers previous songs words	G63a) Participants remember lyrics from previous song
E19a) Participants unsure of words	B91c) Participants unsure of chorus lyrics	H88a) Indiv sing previous songs words	
E21a) Participants unsure of words	B120c) Unsure of some verse words	H100a) Indiv sing previous songs words	
H38b) Participants unsure of words	G10c) Participants unsure of verse lyrics	H118a) Indiv sings previous songs words on purpose	
H62a) Participants unsure of words	G21a) Unsure of verse words	J7b) Participants remember words from previous song	
H67b) Participants unsure of words	D5a) Unsure about verse lyrics		
H76a) Participants unsure of words	D22b) Participants unsure of chorus lyrics		
	D29a) Unsure about chorus lyrics		

	D49b) Participants unsure of chorus lyrics		
	D169d) Participants unsure of some chorus words		
	F13a) Individ unsure of chorus lyrics		
	I6a) Unsure of some verse lyrics		
	K3b) Individ unsure of when to sing		

**Appendix AC: Recollection of melody**

Table 1

Recollection of melody					
<u>Remembering of melody</u>	<u>Remembering of melody</u>	<u>Unsure of melody</u>	<u>Unsure of melody</u>	<u>Recollection of previous song melody</u>	<u>Recollection of previous song melody</u>
A73b) Participants remember melody	B94b) Individ remembers melody	A56b) Participants unsure of melody	B18b) Participants unsure of verse melody		G10b) Participants remember melody from previous song

A75b) Participants remember melody	B114a) Participants remembers melody	A68a) Participants unsure of melody	B32c) Unsure of chorus melody		H72a) Participants remember melody from previous song
C7b) Participants unsure about melody	G32f) Participants remembers lyrics and melody with ease	A62c) Participants unsure of melody	B119d) unsure of verse melody		
C11a)Participants remember melody	G40e) Indiv remembers melody and lyrics	C7b) Participants unsure about melody	D49c) Participants unsure of chorus melody		
E3c) Indiv remembers melody	G45c) Participants remembers lyrics and melody with ease		D117f) Participants unsure of chorus melody		
E5a)Participants remember melody	G50c) Participants remember melody				
E18c) Participants remember melody	G62a) Participants remember melody				
E21d) Participants remembers melody	G72b) Participants remember melody and lyrics with ease				
E24b) Participants remember melody well	G78b) Participants remember lyrics and melody with ease				

C39b) Participants remember melody	G84c) Participants remembers melody and lyrics very well				
E53e) Participants remembers melody with ease	D29b) Participants immediately remembers melody				
H72a) Participants remember melody	D54b) Indiv remembers melody better				
H122c) Indiv remembers melody	D123c) participants remember melody				
H135b) Participants remembers melody	D132c) Indiv remembers melody				
J5c) Indiv remembers melody	D151c) Participants remembers melody				
	D169e) Participants remembers melody				
	F6a) Participants remembers melody and lyrics with ease				
	F17b) Participants remembers lyrics and melody with ease				

	F50c) Participants remembers lyrics and melody				
	F76b) Participants remember melody and lyrics with ease				
	F91a) Participants remember melody and lyrics with ease				
	F105a) Participants immediately remembers melody and lyrics with ease				
	F127a) Participants remembers melody and lyrics with ease				
	F133c) Indiv remembers melody and lyrics with ease				
	F148a) Participants remember the lyrics and melody with ease				
	I13d) Participants remembers melody				

	I16b) Indiv remembers melody and lyrics				
	I19b) Indiv remembers lyrics and melody				
	I20b) Participants remembers melody and lyrics				
	I22b) Indiv remembers melody and lyrics				
	I46d) Participants remembers melody and lyrics				
	I53c) Participants remembers melody and lyrics well				
	I58c) Participants remembers melody and lyrics very well				
	I89b) Participants remembers melody and lyrics				

	I99c) Participants remembers melody and lyrics by themselves				
	I108c) Participants remembers melody				
	K3b) Indiv remembers lyrics and melody				
	K10a) Participants immediately remember lyrics and melody with ease				
	K18e) Participants remembers lyrics and melody				
	K49b) Participants remember lyrics and melody with ease				
	K54b) Participants remember lyrics and melody with ease				
	K100f) Participants remembers melody				

### **Appendix AD: Cross-modal interpretation of music**

Table 1

Cross-modal interpretation of music	
<b><u>Interpretation of music through movement</u></b>	<b><u>Interpretation of music through movement</u></b>
A87a) Indiv taps to the pulse of the music	B63a) Indiv makes arm movements matching the pulse of the music
C36a) Indiv participant claps hands to the pulse of the music	B66a) Indiv swings legs matching the pulse of the music
C76d) Indiv jumps up in excitement	B67a) Indiv moves arms matching pulse of the music
C84b) Indiv participant associates music with playing of instrument	B76a) Indiv participant hop in their chairs and seem to want to jump up
C84c) Indiv participant taps rhythm of song on his lap vigorously	B77a) Participant emphasize syllables of word by swinging arms to the pulse of the music
C86a) Participants spontaneously move bodies to pulse of music	B107b) Participants swing legs and arms at a fast pace

C89b) Indiv participant associates music with playing of instrument	B121b) Indiv swings legs energetically
C98b) Indiv participants associates music with playing of instruments	G12a) Indiv respond to music by physically cupping hands in front of mouth and singing
C99c) Indiv stomps feet on floor to rhythm of music	G22a) Indiv respond to music by physically cupping hands in front of mouth and sing
C102a) Indiv participant jumps up in excitement	H29d) Indiv hops in chair briefly
C104b) Indiv participant associates music with playing of instruments	H30d) Indiv sings with hands cupped in front of mouth
C104b) Indiv participant finish musical phrase on imaginary guitar	G32d) indiv rocks upper body
C104c) Indiv participant finish musical phrase on imaginary guitar	G40c) Indiv sings with hands cupped in front of mouth
C104d) Indiv dances	G47a) Indiv cups hands in front of mouth
E46a) Indiv participant hops to the pulse of the music	G53a) Indiv cups hands in front of mouth

E59b) Indiv respond to music by rhythmically tapping of finger on PCS	G56c) Two indiv hop in their chairs to the pulse of the music
E66a) Indiv participant make hand big gestures	G58f) Indiv sings with cupped hands in front of mouth
E76a) Two participants hop in chairs	G64a) Indiv cups hands in front of mouth
E76b) Two indiv respond with high energy movements	G64d) Indiv rocks upper body matching the pulse of the music
E77a) Two indiv respond with high energy movements	G71c) Indiv participant hops in chair energetically
E79a) Participants respond with high energy movements	G79a) Indiv respond to music by physically wiggling fingers
E80c) Participants hop in chairs to pulse of music	G81a) Indiv cups hands in front of mouth
E109c) Participants hop in chairs	G82b) Indiv cups hands in front of mouth
E110b) Indiv participant indicate using hand gestures	G84e) Indiv cups hands in front of mouth
E118b) Indiv sings louder	G88) Indiv cup hands in front

with cupped hands	of mouth
E118a) Indiv cups hands in front of mouth	G90a) Participants rock upper body gently
E119a) Indiv hops in chair with high energy	D6a) Indiv rocks upper body matching the pulse of the music
E125a) Indiv taps feet to the beat of the music	D12b) Indiv participant rocks upper body matching the pulse of the music
E137a) Two participants cup hands in front of mouths	D37a) Two participants rock upper bodies matching the pulse of the music briefly
E139a) Participants move bodies to the beat of music	D56a) Indiv participant rocks upper body matching the pulse of the music
E143a) Indiv participants cup hands in front of mouth	D89d) Participant hop in chairs
H43b) Participants swing legs	D108a) Two participant hop in their chairs
H70b) Indiv participant swing legs vigorously	D109a) Indiv participant waves arms
H112a) Indiv stands up spontaneously for a brief moment in excitement	D110a) Indiv participant nods head to pulse of the music

H141a) Participants rock upper bodies energetically	D115a) Participant wave arms and legs
L37a) Participants swings legs fast	D115b) Participants hop in chairs energetically to the pulse of the music
L46a) Sitting indiv respond with high energy movements	D117h) High energy and fast paced physical movements
L49a) Sitting indiv participant responds with high energy movements	D125b) Participants clap hands, wave arms and swing legs
L59a) indiv respond with high energy movements	D130a) Participants nod their heads and swing legs to the pulse of the music
L68a) indiv respond with high energy movements	D134a) Participant excitedly hop in chairs
L74a) Participants rock bodies to pulse of music	D142a) Indiv participant claps hands
L76a) Participants rock bodies to pulse of music	D143a) Indiv participant swings and kick legs energetically
L81b) Indiv participant occasionally claps hands matching the pulse of the music	D152a) Indiv participant wave their arms and swing their legs fast and with high energy

E61b) Indiv waves arms	D157a) Indiv participant swings arms and hops in chair
	D161b) Participants respond by hopping in their chairs energetically
	D173c) Participant excitedly and energetically hop in chairs and wave arms
	D181a) Participant swing arms and legs excitedly
	F8a) Indiv swings arms energetically
	F9a) Indiv excitedly stands up briefly
	F12b) Indiv waves arms cheerfully
	F18a) Participants jump up from chairs in excitement
	F19a) Participants swing legs and arms energetically
	F25a) Indiv waves arms matching the pulse of the music

	F31a) Participants hop excitedly and energetically in their chairs
	F31b) Participants swing legs vigorously matching the pulse of the song
	F32a) Participants wave arms vigorously matching the pulse of the music
	F36b) Participants physically stop movement in anticipation of music
	F39b) Participants wave arms and swings legs excitedly
	F40a) Participants physical movements matches lively and cheerful characteristics of music
	F49a) Indiv moves arms matching the pulse of the music
	F54a) Indiv swings legs vigorously and fast matching the pulse of the music

	F56c) Participants swing legs and wave arms slowly matching the pulse of the music
	F59b) Participants swing limbs with high energy matching the pulse of the music
	F69a) Participants swing legs with high energy matching the pulse of the music
	F77a) Two indiv swing arms matching the pulse of the music
	F80a) Participants energetically and vigorously swing legs matching the pulse of the music
	F87b) Participants swing legs and wave arms energetically
	96b) Participants swing arms and legs energetically
	F101a) Participants swing arms and legs energetically

	F109b) Participants swing arms and legs matching the pulse of the music
	F115c) Participants swings arms and legs energetically and vigorously
	F115d) Participants swing arms and legs matching the pulse of the music
	F126b) Participants swing arms and legs energetically matching the pulse of the music
	F135a) Participants swing their arms and legs energetically and excitedly
	F142c) Participants swings arms and legs energetically to the pulse of the music
	F152d) Participants swing arms and legs energetically
	F159b) Participants swing arms and legs energetically matching the pulse of the music

	F163c) Participants swings arms and legs energetically
	F164b) Participants hop in their chairs energetically and with excitement
	I13b) Indiv hops in chair
	I22d) Indiv hops in chair rhythmically
	I46a) Indiv participant hops in chair for brief moment
	I52a) participants hop energetically in their chairs
	I58a) Participants hop in chairs in excitement
	I60a) Indiv Participant flops hands in the air energetically
	I68a) participants hop in chairs energetically
	I69a) Indiv participant flops arms in the air energetically
	I69a) Indiv participant flops arms in the air energetically

	I97f) Participants wiggle and hop in their chairs in excitement matching pulse of the music
	I104d) Two indiv hop and rock to the pulse of the music
	I110b) Participants rock upper bodies to the pulse of the music
	I112a) Participants hops in chairs energetically
	I114b) Participants adjust physical movements matching tempo and pulse of music
	I116b) Participants adjust physical movements matching tempo and pulse of music
	K8b) Indiv taps fast and energetic rhythm on his chair
	K12a) Indiv participant stomps chair with his hand matching the pulse of the music

	K13a) Indiv hops in chair energetically
	K17b) Indiv energetically hops in his chair
	K34d) Indiv taps main pulse on his chair loudly and energetically
	K46e) Indiv hops in his chair excitedly
	K51a) Indiv respond hops in chairs in excitement
	K53a) Indiv excitedly hops in chair energetically
	K52a) Indiv slowly rocks upper body
	K70b) Indiv respond excitedly to music through physical imitation of animal
	K86b) Indiv participant jumps up in excitement
	K88b) Indiv participant respond to music through high energy and confident physical movement

	K95a) Participants respond with physical movements and vocal imitations of animal in song
	K72b) Indiv occasionally make hand gestures

**Appendix AE: Therapist's musical role**

Table 1

Therapist's musical role			
<u>Therapist dynamics</u>	<u>Therapist dynamics</u>	<u>Therapist tempo</u>	<u>Therapist tempo</u>
A31a) Therapist sing softly	B3a) Therapist strums guitar softly	A24b) Therapist sing slowly and clearly	B4a) Therapist strums guitar slowly
C4a) Therapist sings loud and lively	B16a) Therapist strums guitar softly and gentle	A70b) Therapist plays moderately slow	B39a) Therapist increase tempo of guitar strumming
C80a) Therapist and participants sing loudly and energetic	B40a) Therapist increase dynamics of singing and guitar strumming	A71a) Therapist strum chords on main pulse slowly	B47c) Therapist plays moderately fast
E89c) Participants and therapist sing loud and lively together	B41a) Therapist sings and strums louder	A78a) Therapist strum main pulse slowly	B50a) Therapist decrease tempo

L87b) Therapist sings loud and with force	B103c) Therapist plays loud and energetic	C94a) Therapist strums guitar gently and slowly paced	B50b) Therapist sings slow
L72a) Therapist shifts music suddenly to slow tempo and soft and calm character	B106b) Therapist sings and strums loudly	E34b) Therapist plays moderately fast	B91f) Therapist's music is lively and moderately fast paced
E145a) Therapist shifts dynamics from loud to soft and gentle	B110c) Therapist plays loud and energetic	E41b) Therapist plays moderately fast	B103b) Therapist add crescendo
E141b) Therapist alternates dynamics from soft to loud during verse lines	B110a) Therapist sings softly	E41b) Therapist plays moderately fast	B110b) Therapist add decrescendo
E86a) Therapist shifts music to softer but still at a moderately fast paced tempo	B117a) Therapist sings gentle and moderately soft	E131a) Therapist strums guitar moderately fast and lively	B116a) Therapist slow down tempo
E84a) Therapist shifts music to loud and forceful	G6a) Therapist picks strings guitar slowly and softly	E72b) Therapist strums the guitar moderately fast	G6a) Therapist picks strings guitar slowly and softly
E82b) Therapist shifts music to softer but still at moderately fast tempo	G7a) Therapist sings softly and gentle	E120b) Moderately fast paced strumming and singing	G60a) Guitar accompaniment shift to slower and calmer
	G35a) Therapist lowers voice	H27a) Therapist sing slow and calmly	G70a) Therapist fastens tempo and plays with enthusiasm and high energy
	D18a) Therapist strums guitar softly	H41a) Therapist slows down music	D3a) Therapist strums guitar slowly and gentle

	D18b) Therapist gradually increases volume of guitar strumming	H130a) Guitar strumming is a moderately fast tempo	D4a) Therapist sings slowly and gentle
	D31a) Therapist strums guitar and sings softly	H140a) Guitar strumming is a moderately fast tempo	D10a) Therapist strums guitar and sings fast and lively
	D105a) Therapist sings playfully and loud	J37a) Therapist plays moderately fast and lively	D31b) Therapist strums guitar slower
	D120a) Therapist sings softly and slowly	J66a) Therapist plays energetic and at fast paced tempo	D52b) Therapist strums guitar and sings slower
	D121a) Therapist strums guitar softly and slowly	J77a) Therapist music is fast paced and lively	D104b) Therapist plays fast paced
	D124b) Therapist sings and strums fast and loud	J83a) Therapist slow down music to assist pointing indiv	D120a) Therapist sings softly and slowly
	D128a) Therapist sings softly and slowly	J85a) Therapist speeds up music tempo to fast paced and lively	D121a) Therapist strums guitar softly and slowly
	D128b) Therapist strums guitar softly and slowly	L3b) Therapist sings at a moderately fast paced tempo	D124b) Therapist sings and strums fast and loud
	D134b) Therapist strums and sings loud, fast and vigorously	L11e) Therapist sings moderately slow	D128a) Therapist sings softly and slowly
	D135a) Therapist sings softly and slowly	L19c) Therapist's music is a moderately fast paced tempo	D128b) Therapist strums guitar softly and slowly

	D135b) Therapist strums guitar softly and slowly	L62a) Therapist strum guitar and sings vigorously at a fast tempo	D134b) Therapist strums and sings loud, fast and vigorously
	D146b) Therapist sings softly and slowly	L72a) Therapist shifts music suddenly to slow tempo and soft and calm character	D135a) Therapist sings softly and slowly
	D171a) Therapist sings softly and gentle	E86a) Therapist shifts music to softer but still at a moderately fast paced tempo	D135b) Therapist strums guitar softly and slowly
	D175a) Therapist sings softly and gentle	E82b) Therapist shifts music to softer but still at moderately fast tempo	D141a) Therapist fastens tempo
	F14b) Therapist adjust dynamics gradually from soft to loud	E122a) Therapist shifts music to a moderately slow pace	D149a) Therapist fastens tempo
	F28a) Therapist suddenly shift music to fast and lively tempo and loud dynamics	H44b) Therapist slows down the tempo	D150a) Therapist sings fast and hastily
	F43a) Therapist's singing is soft and gentle	H69a) Therapist sings and plays at a moderately slow pace	D146b) Therapist sings softly and slowly
	F55b) Therapist alternates music between fast paced and vigorous strumming and singing to slow paced and calm strumming	H89a) Therapist slows down music to a slower pace	D158a) Therapist strums guitar and sings in slow pace and gentle

	F62a) Therapist sings softly and gentle	L24b) Therapist plays moderately fast	D162b) Therapist sings and strums guitar at moderately slow pace
	F74a) Therapist sings and plays soft, slower and gentle	L32a) Therapist gradually speeds up to a fast pace	D166a) Therapist plays at a fast pace
	F107a) Therapist suddenly shifts music to fast and vigorous	L44b) Therapist gradually shift music to a lively and fast pace	D178a) Therapist strums and sings vigorously and fast paced
	F110b) Therapist's expectantly alternate between fast and slow tempo	L55a) Therapist's strumming is lively, fast paced and energetic	F2a) Therapist plays slow and gentle
	F141b) Therapist adjust to tempo and dynamic shift with ease	L57a) Therapist strums guitar vigorously and sings at a fast pace	F5a) Therapist sings slowly and calmly paced
	F162b) Therapist sings loudly and strums guitar with force	J83a) Therapist slow down music to assist pointing indiv	F14a) Therapist slows down music
	I38a) Therapist alternates tempo and dynamics between the lines from slow and soft to loud, fast and vigorous singing and playing		F21a) Therapist sings slowly and gentle
	I55a) Therapist alternates tempo and dynamics between lines from slow and soft to loud, fast and vigorous singing and playing		F28a) Therapist suddenly shift music to fast and lively tempo and loud dynamics

	I79a) Therapist shifts music to fast a paced tempo and loud		F51a) Therapist suddenly shifts music to a fast and vigorous tempo
	I82a) Therapist shifts music to soft and gentle		F55b) Therapist alternates music between fast paced and vigorous strumming and singing to slow paced and calm strumming
	I85a) Therapist shifts music to loud and fast paced		F61a) Therapist adds ritardando to end verse
	I90a) Therapist's dynamics alternate from energetic to calm and soft during		F66a) Therapist strums and sings fast paced and vigorously
	I106b) Therapist's music gradually shifts from soft to loud		F74a) Therapist sings and plays soft, slower and gentle
	K45b) Therapist sings loudly and with high energy		F78a) Therapist shifts music to fast paced and lively
	B103a) Therapist sings softly		F81b) Therapist shifts music to slow and gentle
	D124a) Therapist's suddenly shift tempo and dynamics to loud and fast tempo		F86a) Therapist suddenly plays with high energy and fast paced
			F90a) Therapist strums lazy and slowly

			F95a) Therapist's music is fast paced and vigorously sung and strum
			F97a) Therapist shifts music to a slow and lazy pace
			F100a) Therapist strums and sings fast and vigorously
			F102a) Therapist shifts music to slow and gentle
			F115a) Therapist plays fast and energetically
			F123a) Therapist sings slowly
			F125b) Therapist unexpectedly sings at a fast and lively tempo
			F131a) Therapist sings slow
			F134b) Therapist sings and strums at a fast pace and vigorously
			F138a) Therapist plays slow and calmly
			F141b) Therapist adjust to tempo and dynamic shift with ease

			F141d) Therapist sings and strums guitar fast paced and energetically
			F143a) Therapist plays slowly and lively
			F147a) Therapist unexpectedly shifts music to slow and gentle paced tempo
			F147b) Therapist unexpectedly shifts music to lively and moderately fast paced
			F154a) Therapist plays at a slow paced tempo
			F157a) Therapist plays energetic and fast paced
			F160a) Therapist sings slowly
			F160b) Therapist suddenly shifts music to a slow paced tempo
			F162a) Therapist suddenly shifts music to fast and energetically paced tempo
			I3a) Therapist plays introduction moderately fast and calmly

			I11a) Therapist strums guitar lively and fast paced
			I31a) Therapist change music to moderately fast and calm
			I32a) Therapist guitar accompaniment changes to moderately fast and cheerful
			I35a) Therapist plays very slow tempo
			I38a) Therapist alternates tempo and dynamics between the lines from slow and soft to loud, fast and vigorous singing and playing
			I44a) therapist plays fast paced with vigorous strumming
			I49a) Therapist sings and strums guitar slowly and lazy
			I40a) Therapist strums at very slow tempo and with a lazy strumming
			I44a) therapist plays fast paced with vigorous strumming
			I49a) Therapist sings and strums guitar slowly and lazy

			I150a) therapist plays and sings fast paced and vigorous
			I151a) Therapist alternates tempo and dynamics between the lines from fast and vigorous singing and playing to slow and soft to loud
			I55a) Therapist alternates tempo and dynamics between lines from slow and soft to loud, fast and vigorous singing and playing
			I56a) Therapist guitar strumming is slow and lazy sounding
			I61b) Therapist's music is slow paced
			I70b) Therapist's music is slow paced
			I79a) Therapist shifts music to fast a paced tempo and loud
			I85a) Therapist shifts music to loud and fast paced
			I88a) Therapist's guitar accompaniment is fast paced

			I92a) Therapist shifts music to lively and fast paced
			I93a) Therapist shifts music to slow and calm
			I95a) Therapist's music is slow and calm
			I106c) Therapist's Tempo remains consistent
			I111a) Therapist shifts music to fast paced tempo and vigorous strumming of guitar
			I115a) Therapist shifts music to fast paced tempo and vigorous strumming of guitar and singing
			I117a) Therapist's music ends with a ritardando
			K5a) Therapist continue music at a moderately slow tempo
			K16a) Therapist's tempo shift gradually faster
			K18a) Therapist ends verse with a ritardando

			K44a) Therapist strum guitar vigorously and fast paced tempo
			K73a) Therapist's guitar accompaniment is lively and moderately fast
			K78a) Therapist gradually fastens the tempo
			K81a) Therapist's music is lively and moderately fast paced
			K99a) Therapist's music is lively and moderately fast paced
			K100a) Therapist shifts music to vigorous strumming and singing at a fast paced tempo
			K103a) Therapist ends song with a ritardando
			F20b) Therapist shift music to gentle and slow
			F67a) Therapist's music remains fast paced and vigorous

			K56a) Therapist's music is moderately slow and calm
			K58a) Therapist gradually shifts music to a faster paced tempo to moderately fast and lively
			D124a) Therapist's suddenly shift tempo and dynamics to loud and fast tempo

Table 2

Therapist's musical role			
<u>Therapist interpretation of music through movement</u>	<u>Therapist interpretation of music through movement</u>	<u>Therapist's quality of participation</u>	<u>Therapist's quality of participation</u>
H131a) Therapist rocks upper body matching the pulse of the music	B11a) Therapist rocks upper body to pulse of the music	A83a) Therapist strum guitar fuller	B5a) Therapist put emphasis on beat one and three
	B79a) Therapist imitate animal movement	C4a) Therapist sings loud and lively	B12a) Therapist sings calmly and slowly
	F22a) Therapist rocks upper body matching the pulse of the music	H123b) Guitar accompaniment shifts to gentle and calmer	B16a) Therapist strums guitar softly and gentle
	F45a) Therapist rocks upper body matching slow tempo of the music	C80a) Therapist and participants sing loudly and energetic	B26a) Therapist emphasize key words

	F75a) Therapist rocks upper body matching the pulse of the music	H30a) Therapist sings alone	B32b) Therapist sings cheerful and lively
	F104a) Therapist rocks upper body matching the pulse of the music	C94a) Therapist strums guitar gently and slowly paced	B40b) Therapist plays and sings lively
	F139a) Therapist rocks upper body matching the pulse of the music	C96a) Therapist matches participants singing with guitar	B41a) Therapist sings and strums louder
	F155a) Therapist rock upper body matching the pulse of the music	E34a) Therapist plays guitar with both hands	B47a) Therapist strum guitar with enthusiasm
	I36a) Therapist rocks upper body matching pulse of music	C60b) Therapist ends musical phrase	B47b) Therapist plays emphasized syncopated beat
	I61c) Therapist rocks upper body matching the pulse of the music	E54a) Therapist pause music	B110d) Therapist creates musical anticipation
	I70a) Therapist rocks upper body matching the pulse of the music	E73a) Therapist strums the guitar lively	B116b) Contrasting guitar accompaniment style
		E89c) Participants and therapist sing loud and lively together	B117a) Therapist sings gentle and moderately soft
		E131a) Therapist strums guitar moderately fast and lively	G7a) Therapist sings softly and gentle

		E122b) Guitar accompaniment changes	G18a) Therapist strums guitar gently
		E144b) Guitar accompaniment shift to calm and gentle	G36a) Therapist creates anticipation
		E147a) Therapist plays and sings cheerfully	G70a) Therapist fastens tempo and plays with enthusiasm and high energy
		H27a) Therapist sing slow and calmly	D3a) Therapist strums guitar slowly and gentle
		H60a) Therapist sings with enthusiasm	D4a) Therapist sings slowly and gentle
		H79a) Therapist sings calmly	D10a) Therapist strums guitar and sings fast and lively
		H95b) Therapist sings with enthusiasm	D24b) Therapist pauses music
		H95a) Therapist match strumming tempo and singing with indiv PCS pointing	D33d) Therapist sings alone
		H111a) Therapist sings alone	D68a) therapist sings lively
		H120b) Participants and therapist sing together with enthusiasm	D72a) Therapist sings alone

		H121c) Therapist strum guitar energetically	D79a) Therapist sings alone
		H124a) Guitar accompaniment shifts to calming and gentle	D89a) Therapist sings alone
		H129a) Therapist strum guitar lively and energetic	D97a) Therapist matches quality of indiv strumming using voice
		H139a) Therapist strums guitar lively and energetic	D104a) Therapist strums guitar vigorously
		J25a) Therapist create musical anticipation	D105a) Therapist sings playfully and loud
		J37a) Therapist plays moderately fast and lively	D111b) Therapist pauses music
		J66a) Therapist plays energetic and at fast paced tempo	D118a) Therapist creates musical anticipation
		J77a) Therapist music is fast paced and lively	D122a) Therapist quality of voice is calm and gentle
		J85a) Therapist speeds up music tempo to fast paced and lively	D126a) Therapist sings alone
		L19b) Therapist's music is lively and cheerful	D127a) Therapist pauses music

		L35a) Therapist play guitar lively and energetic	D128c) Therapist quality of voice is calm and gentle
		L47b) Therapist add musical anticipation	D131a) Therapist adds musical anticipation
		L60a) Therapist pause music	D134b) Therapist strums and sings loud, fast and vigorously
		L61c) Therapist add unpredicted anticipation	D133a) Therapist suddenly continues with song
		L62a) Therapist strum guitar and sings vigorously at a fast tempo	D135c) Therapist quality of voice is calm and gentle
		L67a) Therapist adds unpredictable anticipations between verses	D136a) Therapist adds musical anticipation
		L72b) Therapist sings and strums lazily	D153a) Therapist adds musical anticipation
		C100a) Therapist delays music between the verse and chorus section	D155a) Therapist matches indiv participants singing
		L87b) Therapist sings loud and with	D160a) Therapist adds musical

		force	anticipation
		L72a) Therapist shifts music suddenly to slow tempo and soft and calm character	D164a) Therapist adds musical anticipation
		L75c) Therapist s music is fast paced and lively	D165a) Therapist extends anticipation
		L23a) Therapist pauses music	D161a) Therapist match indiv participants enthusiastically and energetic singing
		L5a) Therapist removes distractions	D171a) Therapist sings softly and gentle
		J67a) Therapist sings alone	D172a) Therapist adds musical anticipation
			D172b) Therapist strums and sings vigorously and fast paced
			D176a) Therapist adds musical anticipation
			D178a) Therapist strums and sings vigorously and fast paced
			F2a) Therapist plays slow and gentle
			F15a) Therapist s guitar strumming changes to

			double time
			F29a) Therapist strums guitar vigorously
			F34a) Therapist adds musically anticipation
			F38a) Therapist singing and playing matches indiv singing
			F42a) Therapist adds musical anticipation
			F55b) Therapist alternates music between fast paced and vigorous strumming and singing to slow paced and calm strumming
			F57a) Therapist adds musical anticipation
			F62a) Therapist sings softly and gentle
			F66a) Therapist strums and sings fast paced and vigorously
			F71a) Therapist adds musical anticipation

			F73a) Therapist's guitar accompaniment changes
			F81b) Therapist shifts music to slow and gentle
			F86a) Therapist suddenly plays with high energy and fast paced
			F90a) Therapist strums lazy and slowly
			F95a) Therapist's music is fast paced and vigorously sung and strum
			F97a) Therapist shifts music to a slow and lazy pace
			F100a) Therapist strums and sings fast and vigorously
			F102a) Therapist shifts music to slow and gentle
			F107a) Therapist suddenly shifts music to fast and vigorous
			F103a) Therapist's guitar accompaniment changes

			F113c) Therapist adds musical anticipation
			F115a) Therapist plays fast and energetically
			F125a) Therapist adds musical anticipation
			F128a) therapist adds musical anticipation
			F134a) Therapist adds musical anticipation
			F134b) Therapist sings and strums at a fast pace and vigorously
			F134c) Therapist unexpectedly starts to sing
			F141d) Therapist sings and strums guitar fast paced and energetically
			F146a) Therapist sings and strums guitar lively and strong

			F147a) Therapist unexpectedly shifts music to slow and gentle paced tempo
			F157b) Therapist suddenly shifts music to a vigorous and energetic character
			F162b) Therapist sings loudly and strums guitar with force
			F166a) Therapist strums a strong final chord to end the song
			I3a) Therapist plays introduction moderately fast and calmly
			I11a) Therapist strums guitar lively and fast paced
			I14a) Therapist pause music
			I31a) Therapist change music to moderately fast and calm
			I32a) Therapist guitar accompaniment changes to moderately fast and cheerful

			I135b) Therapist plays with a lazy strumming
			I38a) Therapist alternates tempo and dynamics between the lines from slow and soft to loud, fast and vigorous singing and playing
			I39a) Therapist creates anticipation
			I43a) Therapist add anticipation
			I44a) therapist plays fast paced with vigorous strumming
			I49a) Therapist sings and strums guitar slowly and lazy
			I47a) Therapist adds musical anticipation
			I40a) Therapist strums at very slow tempo and with a lazy strumming
			I44a) therapist plays fast paced with vigorous strumming
			I47a) Therapist adds musical anticipation

			I49a) Therapist sings and strums guitar slowly and lazy
			I150a) therapist plays and sings fast paced and vigorous
			I151a) Therapist alternates tempo and dynamics between the lines from fast and vigorous singing and playing to slow and soft to loud
			I55a) Therapist alternates tempo and dynamics between lines from slow and soft to loud, fast and vigorous singing and playing
			I56a) Therapist guitar strumming is slow and lazy sounding
			I57a) Therapist adds anticipation
			I64b) Therapist pauses music
			I65a) Therapist adds anticipation
			I82a) Therapist shifts music to soft and gentle

			I84a) Therapist adds musical anticipation
			I87a) Therapist's music is lively and energetic
			I90a) Therapist's dynamics alternate from energetic to calm and soft during
			I92a) Therapist shifts music to lively and fast paced
			I93a) Therapist shifts music to slow and calm
			I95a) Therapist's music is slow and calm
			I96a) Therapist adds musical anticipation
			I111a) Therapist shifts music to fast paced tempo and vigorous strumming of guitar
			I115a) Therapist shifts music to fast paced tempo and vigorous strumming of guitar and singing
			K2a) Therapist's music is moderately slow and calm

			K44a) Therapist strum guitar vigorously and fast paced tempo
			K47a) Therapist adds musical anticipation
			K50b) Therapist adds musical anticipation
			K76b) Therapist modulates to different key
			K81a) Therapist's music is lively and moderately fast paced
			K99a) Therapist's music is lively and moderately fast paced
			K100a) Therapist shifts music to vigorous strumming and singing at a fast paced tempo
			K101a) therapist adds anticipation
			F20b) Therapist shift music to gentle and slow
			F67a) Therapist's music remains fast paced and vigorous
			K56a) Therapist's music is moderately slow and calm

			K58a) Therapist gradually shifts music to a faster paced tempo to moderately fast and lively
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**Appendix AF: Characteristics of the music**

Table 1

Characteristics of the music					
<u>Tempo</u>	<u>Tempo</u>	<u>Rhythm</u>	<u>Rhythm</u>	<u>Dynamics</u>	<u>Dynamics</u>
A21a) Participants sing softly and slowly	G20a) The music is moderately slow	C50b) Indiv participant struggle to keep steady beat	D43a) Indiv participant says words rhythmical	A16a) Participants sing softly	B18a) Participants sing with therapist softly
A27a) Participants sing softly and slowly	D77a) Indiv participant strums fast paced	C51b) Slow uneven tempo strumming	D46b) participants says words rhythmically	A21a) Participants sing softly and slowly	B21a) Participants sing softly
C47a) Indiv participant strums guitar slowly, loudly and clearly	D85b) Indiv participant strums loud and at a presto tempo	C53a) Indiv participant strums guitar in a steady beat	D96b) Indiv participant plays scattered rhythm	A27a) Participants sing softly and slowly	B32a) Participants sing/mumble words softly
C48a) Participants spontaneously sing song slowly and loudly	D93a) Indiv participant strums guitar slowly and gentle	C58a) Indiv participant strums guitar softly, gentle and rhythmical	K22a) Indiv strums guitar rhythmically moderately fast and lively	A32a) Participants sing softly with therapist	B48b) Participants sing louder and pronounce words clearer
C51b) Indiv strums at a slow and uneven tempo	D94a) Indiv participant strums guitar fast and lively	C70c) Indiv keeps steady beat		A37a) Participants sing softly	B63c) Two participants sing very softly

C70a) Indiv participant strums guitar moderately loud and slowly paced	D96a) Indiv participant fastens tempo	C84c) Indiv participant taps rhythm of song on his lap vigorously		A57a) Participants sing moderately loud	B75a) Participants sing emphasize words loudly
C74a) Indiv participant strums slowly	D114a) Therapist and participants sing together fast paced and lively	C99c) Indiv stomps feet on floor to the rhythm of music		A60c) Participants sing softly	B84b) Participants sing louder
C75a) participants sing slowly	D126b) Tempo too fast for participants to sing	E27a) Participants remember rhythm of song		A64a) Participant sings loudly and spontaneously	B91a) Participants sing moderately soft
E3c) Indiv participant sings slowly	D151b) Participants sing fast and hastily with therapist	E59b) Indiv respond to music by rhythmically tapping of finger on PCS		A75a) Participants sing softly	B93a) Indiv participant sings loudest in group
E43c) Participants sing at moderately fast tempo	D160d) Indiv participant sings with confidence and fast paced	E80c) Participants hop in chairs to pulse of music		A79a) Participants sing louder	B96a) Participants sing moderately soft
E60b) Indiv sings loud and with confidence	F6a) Participants sing slowly	E125a) Indiv taps feet to the beat of the music		C6d) Participants sing louder	B104c) Participants adjust their singing to lively and louder
E62a) Participants sing loudly	F46a) Participants sing slowly and gentle	E139a) Participants move bodies to the beat of music		C14a) Participants sing loud and lively	B113a) Participants sing loudly and cheerfully
E147b) Music is moderately fast	F52a) Indiv sings faster than the intended tempo	H108b) Indiv points rhythmically		C17a) Participants sing loud	B114c) Participants sing loudly and energetically

E147c) Song ends with gradual ritardando	F56b) Participants sing slowly and gentle	H117a) Indiv direct attention to PCS rhythmically	C19b) Participants sing loudly	B118a) Participants match therapist gentle and moderately soft singing
H46a) Participants sing louder and faster matching indiv participants singing	F58a) Therapist and participants match indiv fast paced and vigorous singing	J90a) Pointing indiv match group singing rhythmically when pointing PCS	C22c) Participants sing loudly	B119e) Indiv sings the loudest
H84c) Music is energetic and fast paced	F93b) Indiv sings ahead spontaneously and fast paced	L79a) Indiv strum guitar rhythmically with steady beat	C29c) Participants sing loudly and with excitement	B120d) Participants sing emphasized words loud and clear
H91a) Participants sing softly and slowly	F94a) Therapist and participants sing fast paced and energetically	L82a) Indiv keeps the beat steady	C34a) Participants sing loudly	B121a) Indiv participant sings louder than group
L22a) Music is lively and moderately fast	F97c) Participants sing slowly and lazy	L85a) Indiv tempo and rhythm of strumming is disorganized and unpredictable	C47a) Indiv participant strums guitar slowly, loudly and clearly	G23a) Indiv sings the loudest
L36a) Tempo of music is moderately fast	F112b) Indiv sings energetically and fast paced	L89a) Indiv strum guitar rhythmically with steady beat	C47a) Participants spontaneously sing song slowly and loudly	H27a) Participants sing loudly and with confidence
L40b) Music is slow paced and sung softly by therapist and participants	F141c) Indiv sings fast paced and loudly with high energy		C54b) Participants sing louder	G29a) Participants and therapist sing loudly and with confidence together

L41a) Dynamics gradually shift to louder and faster paced	F144a) Participants sing slow and lively			C58a) Indiv participant strums guitar softly, gentle and rhythmical	G47b) Indiv sings louder
L56b) Participants sing fast paced and lively	I4a) Music is moderately fast and lively			C59b) Participants sing softly	G53b) Indiv sings louder and energetically
L58b) Participants sing fast paced, energetic and loud	I33a) Participants sing slow and softly			C65a) Indiv participant sings softly	G56b) Participants sing loudly
L61b) Music is lively energetic and fast paced	I37a) Participants sing loud and slowly			C66b) Individual sings alone softly	G58a) Participants sing loudly and more energetically
L71a) music is fast paced and lively	I49c) Participants sing slow and lazy			C70a) Indiv participant strums guitar moderately loud and slowly paced	G72a) participants sing loudly
L79b) Indiv strumming is lively and moderately fast	I74b) indiv sing with confidence at a fast paced tempo			C71b) Participants sing softly	G75a) Indiv softly sings verse
L82a) Indiv strums beat steady	I76a) Music is moderately fast			C76a) Participants sing loudly	G78a) Participants sing loudly
L84b) Indiv strums guitar with force and at a presto tempo	I99b) Participants predict tempo and dynamic changes by themselves			C80a) Therapist and participants sing loudly and energetic	G81b) Indiv sings loudly and playfully

L85a) Indiv tempo and rhythm of strumming is disorganized and unpredictable	I107a) Tempo and dynamics remain the same			C87a) Participants sing louder	G82a) Indiv imitates animal vocal sound loudly and energetically
	I109b) Music is moderately slow paced			C95a) Indiv participant spontaneously sings loud and energetic	G84f) Indiv sings loudly and playfully
	I113a) Music shifts to slow paced tempo and softer			C102b) Indiv participant sings loudly	G86a) Participants sing loudly and with confidence
	I114c) Participants sing softly and slowly			C105a) Participants sing excitedly and loud	G88b) Indiv sings loudest
	K8a) Music is lively and fast paced			E15a) Participants sing louder	D5b) Participants sing very softly
	K22a) Indiv strums guitar rhythmically moderately fast and lively			E65b) Indiv shouts lyrics loudly	D11b) Participants sing softly
	K25c) Indiv strums uneven tempo			E75a) Participants sing loud and with enthusiasm	D19a) Indiv participant sings with therapist softly
	K33a) Indiv tempo and dynamics of strumming remain consistent			E81a) Participants sing loudly and energetic	D28a) Participants sing softly

	K30a) Indiv strums a steady beat			E83b) Participants sing softly	D33a) Indiv Participants sing softly with therapist
	K38a) Indiv strums irregular unpredictable tempo			E85b) Participants sing loudly and excitedly	D39a) Indiv participant sings louder
	K42a) Indiv strumming gradually grow more steady and predictable			E89c) Participants and therapist sing loud and lively together	D53a) Indiv sings softly with therapist
	K48a) Music shifts to slow and calm			E93b) Indiv sings loudest	D71a) Two participants sing softly with therapist
	I99b) Participants predict tempo and dynamic changes by themselves			E117a) Indiv sings louder and playful	D81b) Indiv sings loudly and lively
	K63a) Music is moderately slow and calm			E118b) Indiv sings louder with cupped hands	D85b) Indiv participant strums loud and at a presto tempo
	K63b) Therapist and participants sing moderately slow and calm			E127g) participants sing loudly and with high energy	D116a) Participants sing loudly and with excitement
	K83b) Tempo and dynamics remain the same			E136c) Participants sing loudly and lively	D124a) Sudden tempo and dynamic change to loud and fast tempo

				E143b) Individ sings louder	D129a) Participants sing softly with therapist
				H38a) Participants sing softly	D148a) Participants sing loudly and with high energy
				H39b) participants sing unclear and softly	D148b) Individ participant sings louder
				H45b) Participants sing softly	D163a) Participants sing lively and loud with therapist
				H45d) Individ participant sings with loud and energetic	D169c) Emphasized words are sung the loudest
				H46a) Participants sing louder and faster matching indiv participants singing	D173a) Participants sing loudly
				H62b) Participants sing softly	D180a) Participants sing loud and vigorously
				H63b) Individ participant sings with loud and with force	F7a) Individ sings the loudest
				H66c) participants sing softly	F24b) Individ sings loudly and overpowering

				H70a) Indiv sing loudly and energetically	F37b) Indiv sings loudly and with confidence
				H71b) Participants sing softly	F50b) Two indiv gradually sing louder
				H73a) Participants sing gradually louder	F50a) Indiv sings loudest
				H76b) Participants gradually sings louder	F57c) Indiv sings loudly, energetic and vigorously
				H76c) Indiv sings louder in high pitched voice	F82b) Participants sing lively and loudly
				H83a) Indiv participant sing softly and with high energy	F96a) Participants sing loudly and energetically
				H86b) Participants sing louder	F101b) Participants sing loudly
				H91a) Participants sing softly and slowly	F127c) Participants sing loudly and energetically
				H96a) Participants sing softly	F133b) Indiv sings with force and very loud
				H99a) Two participants sing with therapist with enthusiasm and louder	F141c) Indiv sings fast paced and loudly with high energy

				H106a) Indiv sings softly	F156a) Participants sing lively, loud and with enthusiasm
				H122b) Indiv sings loudest of all	F159c) Participants sing loudly
				H133a) Participants sing with therapist loud and lively	F163b) Participants sing loudly and excitedly
				H133b) Indiv sing loudest	F165a) Participants sing over exaggerated last word loudly and with enthusiasm
				J28a) Participants sing loud	I13e) Participants sings softly with low energy and flat voices
				J30a) Indiv sings louder	I17b) therapist and participants sings cheerfully and loud
				J31d) Participants sing loudly	I19c) Indiv sings with confidence and loud
				J41a) Indiv participant sings louder and with confidence	I20a) therapist and participants sing cheerfully, loud with high energy
				J52a) Participants sing loudly and lively	I25b) Participants sing energetically and loud
				J74c) Participants sing softly	I33a) Participants sing slow and softly

				J74b) Pointing indiv sing loudest	I37a) Participants sing loud and slowly
				J80b) Participants sing loudly and with confidence	I59a) Participants sing loud and lively
				J82c) Indiv sings the loudest	I62a) Participants sing loudly and energetic
				J92c) Indiv sings loudest	I72a) Participants sing lively and loudly
				L4a) Indiv sings louder	I74a) Indiv sings loudly
				L10g) Indiv imitate sound of PCS loudly and playfully	I81c) Indiv shouts lyrics loudly and with force from excitement
				L11d) Participants sing with confidence and loud	I85c) Indiv shouts loudly in excitement
				L13b) Indiv sings loudly	I112b) Participants sing loudly
				L20a) Pointing indiv sings loudly	I113a) Music shifts to slow paced tempo and softer
				L21a) Indiv sings softly	I114c) Participants sing softly and slowly
				L25a) Pointing indiv sings with therapist loudly	I116d) Participants sing loudly and with force

				L28b) Individ sings softly	I117b) Individ shouts last word of the song loudly and confidently
				L31a) Pointing individ sings loudly and energetic with therapist	K7a) Participants sing softly
				L32b) Music gradually grows louder	K11a) Individ expresses emotions of enjoyment and playfulness by singing louder
				L37b) Individ sings loudly and with enthusiasm	K12b) Individ sings loudly animal names in excitement
				L40b) Music is slow paced and sang softly by therapist and participants	K15b) Individ sings loudly
				L41a) Dynamics gradually shift to louder and faster paced	K17c) Individ sings louder
				L42a) Individ and therapist sing loudly together	K23a) Individ strums with force and loudly
				L46b) Sitting individ sing loudly	K26a) Participants sing softly

				L58b) Participants sing fast paced, energetic and loud	K32a) Indiv strums moderately soft
				L63a) Participants sing loudly and excitedly	K34b) Indiv sings very softly
				L69a) Indiv sings loudly	K34c) Indiv strumming gradually grows louder and more confidently
				L81a) Sitting indiv sings loudly	K34e) Indiv sings loudly
					K40a) Indiv strums irregular and unpredictable dynamics
					K42c) Participants sing softly
					K46a) Indiv sings loudly and with high energy
					K49a) Participants and therapist sings softly and whisper-like
					K51b) Indiv sings loudly and energetically
					K71a) Indiv sing softly
					K75a) Participants sing softly

					K84a) Participants sing softly
					K85d) Participants sings softly
					K88c) Two participants softly sing
					K94b) Indiv imitates vocal sounds very loudly
					K96d) Participant vocal imitations are done loudly and with confidence

**Appendix AG: Vocal Participation**

Table 1

Vocal Participation			
<u>Participant speaking of words instead of singing</u>	<u>Participant speaking of words instead of singing</u>	<u>Participant quality of singing</u>	<u>Participant quality of singing</u>
A27b) Participants speak words	D42a) Indiv participant says animal name clearly	A62b) Participants sing with monotonic tone quality	B19b) Low energy participation and singing
A28b) Participants speak words with monotonic voice tone	D43a) Indiv participant says words rhythmical	A68e) Participants sing with monotonic tone quality	B21b) Participants sing more melodically

C27a) Speaking of lyrics instead of singing	D46b) participants say words rhythmically	A79b) Participants sing melodically	B31a) Two participants sing with therapist with enthusiasm
E26a) Speaking or words instead of singing	D113a) Indiv participant softly say correct animal name	A85b) Participants sing melodic	B36c) Low energy participation and singing
L2d) indiv spontaneously say words	D2b) Indiv verbally says first line	C6a) Participants quality of singing is lively and melodic	B43a) Monotonic singing
C88c) Indiv greets animal using spoken language	K57a) Indiv shouts words loudly	C14a) Participants sing loudly and lively	B43b) Participants quality of voice has low energy
A48c) Group speaks the words softly		C47b) Indiv monotonic singing	B48d) Monotonic singing
E65b) Indiv shouts lyrics loudly		C49d) Participants sing melodic	B63e) Two indiv sing more melodic
		C50c) participants dragged singing	B74a) Participants sing with enthusiasm and high energy
		C50d) Participants struggle to match singing with music	B84a) Participants sing with enthusiasm
		C51a) Group matches singing to indiv participants strumming	B88a) Indiv monotonic singing
		C59d) Participants sing with low energy	B89a) Participants sing calmly
		C77a) Two indiv Participants change pitch of voices to higher	B94c) Indiv singing is playful
		C77b) Two indiv sing more playfully	B96b) Participants flat tone quality of singing
		C80a) Therapist and participants sing loudly and energetic	B98a) Indiv adjusts quality of voice to higher pitched

		C80b) High energy singing and participation	B104c) Participants adjust their singing to lively and louder
		C95a) Individ participant spontaneously sings loud and energetic	B113a) Participants sing loudly and cheerfully
		C95b) Participants sing with high energy and excitement	B118a) Participants match therapist gentle and moderately soft singing
		C95a) Individ participant spontaneously sings loud and energetic	B119c) Participants monotonic singing
		C95b) Participants sing with high energy and excitement	B120a) Participants sing monotonic
		C102c) Individ sing and moves with high energy	H21d) Participants singing is low in energy and engagement
		E6b) Participants sing with monotonic tone quality	G23b) Individ singing is playful and energetic
		E9a) Participants sing with monotonic tone quality	G32a) Participants sing with low energy
		E14c) Participants sing with a robotic tone quality	G32b) Participants quality of singing is flat
		E14b) Participant sing melodic	G32i) Individ sings with high energy
		E15b) Participants sing melodic	G52a)Participants sing with flat quality of voices
		E18b) Participants sing with confidence	G53b) Individ sings louder and energetically
		E21e) Participants sing with a flat quality of voice	G58a) Participants sing loudly and more energetically

		E21f) Participants sing with a robotic tone quality	G61a) Participants sing with low energy
		E25a) Participants sing with monotonic tone quality	G62c) Participants monotonic singing
		E43b) Participants sing cheerfully	G64b) Indiv sings louder and playfully
		E53f) Participants quality of singing is livelier	G76a) Therapist and participants cheerfully sing answer together
		E60a) Indiv participant sings with excitement	G81b) Indiv sings loudly and playfully
		E60b) Indiv sings loud and with confidence	G84f) Indiv sings loudly and playfully
		E65a) Indiv participant sing with excitement	G88c) Indiv sings playfully and melodic
		E65b) Indiv shouts lyrics loudly	D36a) Indiv singing quality is monotonic
		E67b) Participants sings with low energy	D36a) Indiv singing quality is monotonic
		E67c) Participants quality of singing is flat	D55b) Two indiv low energy singing
		E75a) Participants sing loud and with enthusiasm	D55a) Two participants tone quality is flat
		E81a) Participants sing loudly and energetic	D68b) Indiv sings lively with therapist
		E85b) Participants sing loudly and excitedly	D81b) Indiv sing loudly and lively
		E89c) Participants and therapist sing loud and lively together	D106b) Participants sing with excitement

		E90a) Indiv participants change pitch of voices to higher	D107c) High energy participation and singing
		E90b) Indiv participants sing playful and silly	D114a) Therapist and participants sing together fast paced and lively
		E93a) Indiv participant sings in high pitched voice	D116a) Participants sing loudly and with excitement
		E94a) Participants sing with enthusiasm and high energy	D117a) Participants sing with confidence and in a playful manner
		E95a) Other Indiv participant match other indiv singing in high pitched voice	D148a) Participants sing loudly and with high energy
		E106a) Participants sing with enthusiasm and high energy	D151b) Participants sing fast and hastily with therapist
		E107a) Two participants sing with high pitched voices	D156a) Participants sing with therapist and indiv participant cheerfully
		E108a) Two participants sing lively and with enthusiasm	H27a) Participants sing loudly and with confidence
		E109a) Two participants singing overpowers others singing	G29a) Participants and therapist sing loudly and with confidence together
		E109b) Participants sing cheerfully	G46a) Participants sing with confidence
		E117a) Indiv sings louder and playful	G86a) Participants sing loudly and with confidence

		E117b) Indiv sings spontaneous and with high energy	D117a) Participants sing with confidence and in a playful manner
		E123a) Indiv continues singing with high pitched voice	D117b) Participants sing with confidence
		E127g) participants sing loudly and with high energy	D154c) Indiv participant sings with confidence
		E136a) Indiv singing with high pitched voice	D160d) Indiv participant sings with confidence and fast paced
		E136c) Participants sing loudly and lively	D163a) Participants sing lively and loud with therapist
		E138a) Participants singing is spontaneous, lively and energetic	D169a) Participants change pitch of voices to higher
		H38c) Participants quality of singing is low in energy	D180a) Participants sing loud and vigorously
		H39a) Participants sing with monotonic tone quality	F7b) Indiv sings with confidence
		H45d) Indiv participant sings with loud and energetic	F9b) Indiv sings with enthusiasm
		H63b) Indiv participant sings with loud and with force	F10b) Participants participate with high energy
		H67a) Participants sing with monotonic tone quality	F11a) Participants singing is lively energetic and melodic
		H67c) Participants quality of singing is low in energy	F16a) Participants sing with high energy and enthusiasm

		H70a) Indiv sing loudly and energetically	F24b) Indiv sings loudly and overpowering
		H73b) Indiv singing overpowers other	F37b) Indiv sings loudly and with confidence
		H76c) Indiv sings louder in high pitched voice	F46a) Participants sing slowly and gentle
		H76e) Indiv singing portrays emotions of silliness and joy	F50d) Participants sing energetically and melodically
		H77b) Indiv monotonic singing	F56b) Participants sing slowly and gentle
		H83a) Indiv participant sing softly and with high energy	F57c) Indiv sings loudly, energetic and vigorously
		H92a) Indiv singing overpowers others	F58a) Therapist and participants match indiv fast paced and vigorous singing
		H116b) indiv singing overpowers others	F76a) Participants sing lively and with enthusiasm
		H120c) Indiv singing overpowers others	F82b) Participants sing lively and loudly
		H133a) Participants sing with therapist loud and lively	F83c) Indiv sings energetically and spontaneously
		H134c) Participants sing cheerfully	F94a) Therapist and participants sing fast paced and energetically
		H135a) Participants sing melodic	F96a) Participants sing loudly and energetically
		J11a) Indiv singing overpower others	F97c) Participants sing slowly and lazy
		J14c) Indiv shouts answer cheerfully and with confidence	F112b) Indiv sings energetically and fast paced

		J16a) Participants and therapist sing together cheerfully	F127c) Participants sing loudly and energetically
		J20b) Participants emphasize iconic PCS	F133a) Individ shouts lyrics in a low pitched voice
		J23a) Participants sing with excitement	F133b) Individ sings with force and very loud
		J26c) Participants shout excitedly animal name	F140a) Participants sing lively and enthusiastically
		J40b) Participants and therapist sing lively and with excitement	F141c) Individ sings fast paced and loudly with high energy
		J45b) Participants sing cheerfully	F144a) Participants sing slow and lively
		J45c) Participants sing with high energy	F151a) Participants quality of voices are lively and energetic
		J50c) Individ speaks words instead of singing	F156a) Participants sing lively, loud and with enthusiasm
		J52a) Participants sing loudly and lively	F158b) Participants sing energetic and vigorously
		J52c) Individ pointing PCS sing cheerfully	F161b) Participants sings lively and with confidence
		J57a) Participants sing with enthusiasm and confidence	F163b) Participants sing loudly and excitedly
		J72a) Participants sing lively and energetic	F164a) Therapist and participants exaggerates final chord by extending the word playfully
		J82d) Participants sing cheerfully	F165a) Participants sing over exaggerated last word loudly and with enthusiasm

		J91b) Participants sing cheerfully and with enthusiasm	I8b) Participants low energy and flat quality of singing
		L31a) Pointing indiv sings loudly and energetic with therapist	I13e) Participants sings softly with low energy and flat voices
		L37b) Indiv sings loudly and with enthusiasm	I17b) therapist and participants sings cheerfully and loud
		L37c) Indiv sings energetic and lively	I20a) therapist and participants sing cheerfully, loud with high energy
		L56b) Participants sing fast paced and lively	I25b) Participants sing energetically and loud
		L58a) Participants quality of voice adjust and match to musical shift with ease	I29c) Participants sing lively and with confidence
		L63a) Participants sing loudly and excitedly	I45a) Participants match music with high energy singing
		L68c) Two indiv participants cheerfully sings with therapist	I46b) Indiv smiles at other indiv
		L80b) Participants and therapist sing together matching indiv lively strumming	I49c) Participants sing slow and lazy
		L90a) Sitting indiv sing with therapist with enthusiasm and energetically	I59a) Participants sing loud and lively
		A37c) Participants sing with low energy	I62a) Participants sing loudly and energetic

			I67a) Participants sing with excitement and lively
			I72a) Participants sing lively and loudly
			I76b) Participants and therapist sing whisper-like
			I77b) Participants whisper lyrics
			I81c) Individ shouts lyrics loudly and with force from excitement
			I83a) Therapist and participants whisper lyrics
			I85c) Individ shouts loudly in excitement
			I89a) Participants sing lively and with confidence
			I91b) Participants and therapist sing whisper-like
			I97a) Participants sing with high energy and enthusiasm
			I98a) Participants sing alone cheerfully
			I101a) Participants sing by themselves with confidence and high energy
			I103b) participants sing lively and energetic
			I104a) Participants sing with confidence and enthusiasm

			I110a) Participants sing with therapist cheerfully
			I116d) Participants sing loudly and with force
			I116e) Participants quality of voice is strong and energetic
			K6a) Therapist and participants sing together at fast tempo
			K12b) Indiv sings loudly animal names in excitement
			K13e) Participants sing energetically and excitedly
			K26e) Participants low energy singing
			K42d) Participants low energy of singing
			K46a) Indiv sings loudly and with high energy
			K46b) Indiv sings with force
			K49a) Participants and therapist sing softly and whisper-like
			K51b) Indiv sings loudly and energetically
			K54a) Participants sing with excitement and enthusiasm
			K58c) Indiv sing in high pitched and playful and silly voice

			K63b) Therapist and participants sing moderately slow and calm
			K82a) Participants sing lively
			K82d) Participants flat quality of singing
			K84b) Participants monotonic singing
			K100g) Participants sing with low energy
			K41a) Participants struggle to match indiv strumming with their voices
			K42b) Group match singing with strumming

**Appendix AH: PCSS identification**

Table 1

PCSS identification					
<u>Own meaning PCS associations</u>		<u>Recognition of PCS</u>		<u>Dependence on PCS</u>	
A5b) Participant associates PCS with own meaning		A9a) Participants recognize PCS with ease		A86a) Participants dependent on PCS to remember words	

A6a) group agrees with associated PCS meaning		A16b) Participants remember PCS with ease		C17b) Participants dependent on PCS to remember words	
C8a) Indiv associates own PCS meaning with movement		A26a) Participants recognize PCS with ease		C22e) Participants dependent on PCS to remember words	
C9b) Indiv Associate PCS with movement		A28a) Participants recognize PCS with ease		C50e) Indiv dependent on PCS to remember words	
A41b) Indiv Associate PCS with movement		A38a) Participants remember PCS		C54d) Participants dependent on PCS to remember words	
C37b) Indiv Associate PCS with movement		A47a) Indiv recognize PCS with ease		C66c) Indiv dependent on PCS to remember words	
J3a) Participant associate PCS with own meaning		A49a) Participants recognize PCS with ease		C67a) Indiv dependent on PCS to remember words	
J15a) Indiv associated own meaning with intended PCS		A51a) Participants recognize PCS with ease		C85a) Participants dependent on PCS to remember words	
		A53a) Participants recognize PCS with ease		C99a) Participants dependent on PCS to remember words	

		A55b) Participants recognize PCS with ease		E19b) Participants dependent on PCS to remember words	
		A60a) Participants remember PCS with ease		E20b) Participants dependent on PCS to remember words	
		A64b) Individ recognize PCS with ease		E21b) Participants dependent on PCS to remember words	
		A79c) Participants recognize PCS with ease		E53b) Participants dependent on PCS to remember words	
				E62c) Participants dependent on PCS to remember words	
		C6b) Participants remember PCS with ease		E78b) Individ dependent on PCS to remember words	
		C7a) Participants remember PCS with ease		J74d) Individ dependent on PCS to remember words	
		C14b) Participants recognize PCS with ease		H85c) Participants dependent on PCS to remember words	

		C17d) Participants immediately remember PCS		H86a) Participants focus and dependent on PCS to remember words	
		C18a) Individ participant recognize PCS immediately		H91c) Participants dependent on PCS to remember words	
		C19a) Participants recognize PCS immediately		H110a) Individ dependent on PCS to remember words	
		C22a) Participants recognize PCS immediately		H115a) Individ dependent on PCS to remember words	
		C26a) Participants immediately remembers PCS		H134a) Participants occasionally dependent on PCS to remember words	
		C29e) Participants immediately recognize PCS with ease		H137b) Participants dependent on PCS to remember words	
		E55b) Participants recognize PCS by themselves		L10c) Individ independent on PCS to remember words	
		C39d) Participants immediately remember PCS with ease			

		C54c) Participants recognize PCS with ease			
		C59c) Participants recognize PCS with ease			
		C67b) Participants remember PCS with ease			
		E3a) Indiv participant immediately recognize PCS			
		E5d) Participants immediately recognize PCS			
		E17a) Participant immediately recognize PCS			
		E18d) Participants recognize PCS with ease			
		E20a) Participants recognize PCS immediately			
		E24a) Participants remembers PCS with ease			

		E37a) Indiv participant immediately remembers PCS with ease			
		E53c) Participants remember PCS with ease			
		H9a) Indiv recognize PCS and direct attention to PCS			
		H11a) Indiv recognize PCS with ease			
		H13b) Indiv recognize PCS with ease			
		H15a) Indiv recognize PCS with ease			
		H19a) Indiv recognize PCS with ease			
		H21c) Indiv recognize PCS with ease			
		H23c) Indiv recognize PCS with ease			
		H50a) Participants immediately recognize PCS			

		H52a) Participants immediately recognize PCS			
		H55a) Indiv recognize PCS			
		H58c) Indiv immediately recognize PCS			
		H71c) Participants recognize PCS easier			
		H77c) Indiv recognize PCS with ease			
		J55a) Indiv recognize PCS			
		H85b) Participants recognize PCS with ease			
		H122d) Indiv recognize PCS with ease			
		J5b) Indiv recognize PCS with ease			
		J8a) Two participants recognize PCS immediately			
		J29a) Participants recognize PCS with ease			

		J45a) Participants recognize PCS by themselves			
		J52b) Participants recognize PCS with ease			
		J60b) Participants Recognize PCS with ease			
		L2b) Participants immediately recognize PCS with ease			
		L9a) Indiv immediately recognize word with ease			
		L9c) Indiv remembers PCS with ease			
		L11b) Participants recognize PCS			
		L13c) Participants immediately recognize PCS			
		A85a) Participants recognize PCS with ease			

Table 2

PCSS identification					
<b><u>Participants read PCS by themselves</u></b>		<b><u>High iconicity</u></b>		<b><u>Participant non-verbal modelling</u></b>	
C82a) Participants read PCS by themselves		A9b) Iconicity of word seems higher		E33a) Other indiv participant assist indiv participant by modelling PCS pointing	
J60c) Participants read PCS by themselves		A15d) Iconicity of word seems higher		E40a) Other indiv participant assist indiv participant by modelling PCS pointing	
H84b) Participants read PCS by themselves		A16c) Iconicity of words seems higher		E33a) Other indiv participant assist indiv participant by modelling PCS pointing	
H127b) Participants read PCS by themselves		A26c) Iconicity of word seems high		J47a) Other indiv assist pointing indiv by modelling pointing	
C101b) Participants read PCS by themselves		A28e) Iconicity of word seems high			
		A55c) Iconicity of words seem high			

		A60d) Iconicity of words seem high			
		A79d) Iconicity of words seem higher			
		C9c) Iconicity of words seem higher			
		C29d) Iconicity of word seem higher			
		C87b) Iconicity of words seem higher			
		H11b) Iconicity of PCS seems higher			
		H15c) Iconicity of PCS seems higher			
		H19b) Iconicity of PCS seems higher			
		H21b) Iconicity of PCS seems higher			
		H23d) Iconicity of PCS seems higher			
		H50b) Iconicity of PCS seems higher			

		H52c) Iconicity of PCS seems higher			
		H55b) Iconicity of PCS seems higher			
		H58d) Iconicity of PCS seems higher			
		H74b) Iconicity of chorus PCS seem higher			
		H93b) Indiv remember iconic PCS			
		H138b) Iconicity of PCS for chorus seems high			
		J10b) Iconicity of PCS seems high			

Table 3

PCSS identification					
<u>Therapist invites participants to read PCS by themselves</u>		<u>Intended PCS meaning</u>		<u>PCS recognition dependent on therapist</u>	

L11a) Therapist invites participants to read PCS by themselves		A10c) group agrees with intended PCS meaning		C29b) Therapist direct attention to PCS	
L12a) Therapist invite participants to read PCS by themselves		A47c) Group agrees with intended meaning		C33a) Therapist direct attention to PCS	
L51a) Therapist verbally invite participants to read PCS by themselves		A49b) Participants spontaneously sing intended PCS meaning		C28b) Therapist direct attention to PCS	
E129a) Therapist invites participants to read PCS by themselves		A27b) Individ spontaneously says intended PCS meaning		C25a) Therapist direct attention to PCS	
		A52c) Participants spontaneously shout intended PCS meaning		C21a)Therapist direct attention to PCS	
		A53b) Participants spontaneously shout intended PCS meaning		C16a) Therapist direct attention to PCS	
		C8b) Individ sing intended PCS meaning		C3a) Therapist direct attention to PCS	
		C19b) Participants spontaneously shouts intended PCS meaning		A3a) Therapist direct attention to PCS	
		C76e) Two indiv shouts out intended word of PCS meaning		A8a) Therapist direct attention to PCS	

		C88a) Indiv participant imitates intended PCS		A11b) Therapist direct attention to PCS	
		C88b) Indiv participant associates intended PCS with movement of greeting		A14a) Therapist direct attention to PCS	
		H7a) Therapist gives intended meaning of PCS		A15b) Therapist direct attention to PCS	
		H10b) Therapist verbally says intended PCS meaning		A20a) Therapist direct attention to PCS	
		H21a) Indiv verbally identify intended PCS meaning		A25a) Therapist direct attention to PCS	
		H50b) Participants shouts intended PCS meaning		A30a) Therapist direct attention to PCS	
		H52b) Participants shouts intended PCS meaning		A31b) Therapist direct attention to PCS	
		H56b) Therapist verbally give intended PCS meaning		A33b) Therapist direct attention to PCS	
		L9d) Indiv associates intended PCS with waving movement		A42b) Therapist direct attention to PCS	
		J4a) Therapist explain intended PCS meaning		A44a) Therapist direct attention to PCS	

		J15a) Indiv associated own meaning with intended PCS		A46a) Therapist direct attention to PCS	
		J50b) Indiv associates intended meaning of PCS with waving movement		A55a) Therapist direct attention to PCS	
		J58b) Indiv associates intended meaning of PCS with movement		A61b) Therapist direct attention to PCS	
		L9e) Indiv associates intended PCS with movement of waving movement		A72a) Therapist occasionally direct attention to PCS	
		L13a) Indiv participant imitate movement of a grizzly bear		A77b) Therapist direct attention to PCS	
		L14e) Group agrees with intended PCS meaning		A82a) Therapist occasionally direct attention to PCS	
		L16a) Indiv Associate intended PCS with movement of a slithering snake		A83b) Therapist occasionally direct attention to PCS	
		L26a) Indiv participant imitate the trunk of an elephant		C38b) Therapist direct attention to PCS	

		L42b) Individ imitates the movement of a horse		C49b) Therapist direct attention to PCS	
				C58b) Therapist direct attention to PCS	
				C64b) Therapist direct attention to PCS	
				C70b) Therapist direct attention to PCS	
				E4a) Therapist direct attention to PCS	
				E5c) Therapist direct attention to PCS	
				E10c) Therapist direct attention to PCS	
				E12a) Therapist direct attention to correct PCS	
				E17b) Therapist direct attention to PCS	
				E18a) Therapist direct attention to PCS	
				E23a) Therapist direct attention to	

				PCS	
				H23a) Therapist direct attention to PCS	
				E114c) Pointing indiv dependent on therapist directing attention to PCS	
				H2a) Therapist directs attention to PCS	
				H10b) Therapist direct attention to PCS	
				H12a) Therapist and indiv direct attention to PCS	
				H14a) Therapist direct attention to PCS	
				H16a) Indiv and therapist direct attention to PCS	
				H18a) Therapist direct attention to PCS	
				H20a) Therapist direct attention to PCS	
				H27b) Therapist direct attention to PCS	

				H29a) Therapist direct attention to PCS	
				H49a) Therapist directs attention to PCS	
				H51a) Therapist directs attention to PCS	
				H53a) Therapist directs attention to PCS	
				H58a) Therapist directs attention to PCS	
				H41b) Therapist direct attention to PCS	
				H80a) Therapist alternate directing attention to PCS and strumming of guitar	
				J1a) Therapist direct attention to PCS	
				J6a) Therapist direct attention to PCS	
				J9c) Therapist direct attention to PCS	
				J31b) Therapist direct attention to PCS	

				L3a) Therapist directs attention to PCS	
				L10b) Therapist directs attention to PCS	
				L11c) Therapist direct attention to PCS	
				L13d) Therapist directs attention to PCS	

Table 4

PCSS identification					
<u>PCS recognition dependent on participant</u>		<u>Incorrect directing of attention to PCS by participant</u>		<u>Therapist asks participants PCS related questions</u>	
C97a) Indiv participant directs attention to PCS		C101a) Indiv participant points incorrect PCS		E2a) Therapist ask participants a question about PCS board	
H107a) Indiv participant directs attention to PCS		E47a) Indiv participant direct attention to incorrect PCS		E98a) Therapist ask participants a question about PCS	

E10b) Indiv participant spontaneously direct attention to PCS		E48a) Indiv participant direct attention to incorrect PCS		H3a) Therapist ask participants a question about PCS	
H105a) Other Indiv spontaneously direct attention to PCS		E11a) Indiv participant direct attention to incorrect PCS		J2a) Therapist ask participants a question about PCS	
H108a) Indiv participant directs attention to PCS				J13a) Therapist ask participants a question about song	
H113b) Indiv stands up and start pointing spontaneously to PCS					
E44a) Indiv participant direct attention to PCS					
E45a) Indiv participant direct attention to PCS					
E46b) Indiv participant direct attention to PCS					
H116a) Indiv participant directs attention to PCS					

H117a) Indiv direct attention to PCS rhythmically					
E49b) Indiv participant direct attention to PCS					
E50a) Indiv participant direct attention to correct PCS					
E50b) Indiv participant corrects pointing mistake from previous verse					
E51a) Indiv participant direct attention to correct PCS					
E57a) Indiv participant direct attention to PCS					
E58b) Indiv direct attention to PCS					
E59a) Indiv directs attention to appropriate PCS					
E64a) Indiv participant spontaneously direct					

attention to PCS					
E112a) Indiv direct attention to PCS					
E113a) Indiv direct attention to PCS					
H8a) Indiv spontaneously direct attention to PCS					
E126a) Indiv direct attention to PCS					
H9a) Indiv recognize PCS and direct attention to PCS					
H10a) Indiv direct attention to PCS					
H12a) Therapist and indiv direct attention to PCS					

H13a) Indiv direct attention to PCS					
H16a) Indiv and therapist direct attention to PCS					
H95c) Indiv participant direct attention to PCS					
H120d) Indiv participant direct attention to PCS					
H122a) Indiv participant direct attention to PCS					
J38a) Indiv participant directs attention to PCS					
J44a) Indiv immediately directs attention to PCS					
J51a) Indiv participant spontaneously directs attention to PCS					
J55b) Indiv participant directs attention to PCS					
J60a) Indiv directs attention to PCS					

J68a) Indiv directs attention to PCS					
J81a) Indiv directs attention to PCS					
J84a) indiv directs attention to PCS					
J89a) Indiv directs attention to correct PCS					
J90b) Indiv directs attention to PCS					
L2a) Indiv directs attention to PCS					
L25d) Pointing indiv directs attention to PCS					
L31b) Indiv directs attention to PCS					
L34a) Indiv eager to direct attention to PCS					
L38a) Indiv accurately directs attention to PCS					
L43a) Indiv directs attention to PCS					

L45b) Indiv directs attention to PCS					
L50a) Indiv correctly directs attention to PCS					
L54b) Indiv directs attention to PCS					
L58f) Indiv directs attention to PCS					
L64a) Indiv occasionally directs attention to PCS					
L68b) Other indiv occasionally directs attention to PCS					
H108a) Indiv participant directs attention to PCS					

Table 5

PCSS identification	
<b><u>Therapist's add PCS to communication board</u></b>	
J15c) Therapist add PCS to board	

J20a) Therapist adds PCS to board	
J22a) Therapist add PCS to board	
J24a) Therapist add PCS to board	

**Appendix A1: Focused attention**

Table 1

Focused attention					
<u>Focused attention on PCS</u>		<u>Focused attention on music</u>	<u>Focused attention on music</u>	<u>Focused attention on therapist and guitar</u>	<u>Focused attention on therapist and guitar</u>
A2b) Participants focused on PCS		L48b) Pointing indiv curious of music	B76d) Participant curious and interested in music	C104c) Participants interested and focused on therapist and guitar	B6a) Participants focus on therapist
A2a) Participants interested in PCS		L63c) Participants interest and focus on therapist and music	B76e) Participants focus on therapist and music	A84b) Participants focus on guitar	B9b) Participants focus on therapist

A5d) Participants focused on PCS		L68d) Participants focus on therapist and seem curious of music	B82c) Participants focus on therapist and music	E134b) Participants focus on therapist	B12b) Participants focus on therapist
A14b) Participants focused on PCS			B91e) Indiv focus on therapist and music	C81d) Focus on therapist	B76e) Participants focus on therapist and music
A13a) Participants interested in PCS			B97c) Participants focus on music	L63c) Participants interest and focus on therapist and music	B82c) Participants focus on therapist and music
A19b) Participants interested in PCS			B122b) Participants focus and interested in music	L68d) Participants focus on therapist and seem curious of music	B91e) Indiv focus on therapist and music
A20b) Participants focused on PCS			G8e) Participants focus on therapist and music	L74b) Participants focused on therapist	G8e) Participants focus on therapist and music
A29a) Participants interested in PCS			G29b) Participants focus on therapist and music		G29b) Participants focus on therapist and music
A30b) Participants focused on PCS			G66a) Participants focus on therapist and music		G33b) Participants focus on therapist
A33a) Participants focused on PCS			H87b) Participants focus on therapist and music		G36b) Participants focused and interested in therapist

A36a) Participants focused on PCS			D119b) Participants focus on music		G66a) Participants focus on therapist and music
A42a) Participants focused on PCS			D154f) Participants interested and focused on therapist and music		H87b) Participants focus on therapist and music
A52b) Indiv interested in PCS			D172e) Participants focus on therapist and music		D154f) Participants interested and focused on therapist and music
A61a) Participants focused on PCS			D175b) Participants focus on therapist and music		D163c) Participants focus on therapist
A62d) Participants focused on PCS			F10c) Participants focus on therapist and the music		D165b) Participants focus on therapist
A66a) Participants focused on PCS			F26c) Participants focused on music and therapist		D172e) Participants focus on therapist and music
A76a) Participants focused on PCS			F36a) Participants focused on therapist and music		D175b) Participants focus on therapist and music
A80a) Indiv focus on PCS			F47a) Participants focus on therapist and music		F10c) Participants focus on therapist and the music

A80b) Indiv interested in PCS			F70b) Participants focus on therapist and music	F26c) Participants focused on music and therapist
A84a) Participants focus on PCS			F106a) Participants focus on therapist and music	F36a) Participants focused on therapist and music
J31a) Participants focus on PCS			I5b) Participants focus on therapist and music	F47a) Participants focus on therapist and music
C10a) Participants focused on PCS			I49d) Participants focus on music and therapist	F70b) Participants focus on therapist and music
C13b) indiv interested in PCS			I89d) Participants focus on therapist and music	F85a) Indiv focus on therapist in anticipation
C22f) Participants focused on PCS			I93c) Participants interested and focus on therapist and music	F106a) Participants focus on therapist and music
C38a) Participants focus on PCS			I99e) Participants focus on music	F120a) Participants focus on therapist
C39e) Participants focused on PCS			I104b) Participants focus on therapist and the music	F124b) Participants focus on therapist in anticipation

C54a) Participants focus on PCS			I108d) Participants focus on therapist and music		F132b) Participants focus on therapist with curiosity and anticipation
J11c) Participants focused on PCS					F130b) Participants focus on therapist with curiosity and anticipation
J39a) Therapist and participants focus on PCS					I5b) Participants focus on therapist and music
E7a) Participants focus on PCS					I41d) Participants focus on therapist
E13c) Indiv and group focus on PCS					I49d) Participants focus on music and therapist
E17c) Participants focused on PCS					I73b) Participants focus on therapist
E23b) Participants focus on PCS					I89d) Participants focus on therapist and music
E27c) Participants focused on PCS					I93c) Participants interested and focus on therapist and music

E44b) Participants focus on PCS				I104b) Participants focus on therapist and the music
E45b) Indiv focus on PCS				I108d) Participants focus on therapist and music
E52a) Participants focus on PCS				K24b) indiv focus on strumming guitar
E53a) Participants focus on PCS				K36c) Indiv focus on strumming guitar
E62c) Participants focus on PCS				K100e) Participants focus on therapist
E67a) Indiv direct attention to PCS				D134b) Participants look at therapist in anticipation
E78a) Indiv focus on PCS				
E113b) Indiv focus on PCS pointing				
E126b) Indiv focus on pointing PCS				
E127c) Indiv focus on pointing PCS				
J53a) Participants				

focus on PCS				
H5a) indiv interested in PCS				
H42b) Participants Focus on PCS				
H43a) Participants focus on PCS				
H54a) Participants focus on PCS				
H64a) Participants focus on PCS				
H65a) Therapist focus on PCS				
H71a) Participants focus on PCS				
H81a) Participants focus on PCS				
H86a) Participants focus and dependent on PCS to remember words				
H86a) Participants focus and dependent on PCS				

H91b) Two Participants focus on PCS				
H96b) Participants focus on PCS				
H106b) Indiv focus on PCS				
H111b) Indiv focus on directing attention to PCS				
H137a) Participants focus on PCS				
J67b) Participants Focus on PCS				
J73a) Participants focus on PCS				
J74a) Participants focused on PCS				
J85b) Therapist and participant focus on PCS				
J91a) Therapist and participants focus on PCS				

J92b) Pointing indiv focus on PCS					
L2c) Participants focus on PCS					
L20b) indiv focus on directing to PCS					
L22b) Therapist and participants focus on PCS					
L28c) Indiv focus on PCS					
L39b) Pointing indiv focus on PCS					
L58g) Indiv focus on PCS					
H111b) Indiv focus on directing attention to PCS					

Table 2

Focused attention					
<u>Focused attention on pointing</u>	<u>Focused attention on pointing</u>	<u>Focused attention on strumming indiv</u>	<u>Focused attention on strumming individual</u>	<u>Focus on co-ordination of task</u>	<u>Focus on co-ordination of task</u>

<u>individual</u>	<u>individual</u>				
J82a) Therapist and participant focus on pointing indiv		L86b) Sitting indiv focus on other indiv strumming	D71c) Participants focus on indiv strumming of guitar	C50a) Indiv participant struggle to multi-task reading PCS, sing and strum guitar	
		L90c) Sitting indiv focus on other indiv strumming	D88a) Participants focus on indiv participants strumming	H111c) Indiv participant struggle to multi-task reading PCS, sing and point to PCS	
			D89b) Participants focus on indiv strumming		
			K26b) Participants focus on indiv strumming guitar		
			K46d) Participants focus on strumming indiv		

Table 3

Focused attention			
<u>Lost focus</u>	<u>Lost focus</u>	<u>Focused attention on indiv</u>	<u>Focused attention on indiv</u>

		<u>singing</u>	<u>singing</u>
C76f) Two indiv lost interest and focus	B44a) Indiv seems distracted by other objects in the room		I22e) Participants focus on singing indiv
H39c) Participants seem distracted	B91d) Participants distracted by objects in the room		
H77d) Participants distracted by objects in the room	D5c) Participants distracted by objects in the room		
H91e) Indiv loss of interest and focus	D70b) Participants distracted by objects in the room		
H93c) Indiv distracted by objects in the room	K18c) Indiv distracted by objects in the room		
H99b) Indiv loss of focus and attention	K82d) Participants seem distracted by objects in the room		
L4c) Indiv distracted with water bottle	K103c) Participants distracted by outside element		

### ***Appendix AJ: Rehearsal of song***

Table 1

Rehearsal of song	
<b><u>Repetition of verse with therapist</u></b>	<b><u>Repetition of verse with therapist</u></b>
A12b) Repetition of verse	B10a) Repetition of verse
A15c) Repetition of verse	B20b) Repetition of verse
A18b) Repetition of verse	B27a) Repetition of verse
A31c) Repetition of verse	B33c) Repetition of verse
A36b) Repetition of verse	B38b) Repetition of verse
A39b) Repetition of verse	B45b) Repetition of verse
A58b) Repetition of verse	B92a) Repetition of verse
A65c) Repetition of verse	B97a) Repetition of verse
A734a) Repetition of verse	B115a) Repetition of verse
A81b) Repetition of verse	G11a) Repetition of verse
C11b) Repetition of verse	G18b) Repetition of verse
A23b) Repetition of verse	G59a) Repetition of verse
C32a) Repetition of verse	G65a) Repetition of verse
C39a) Repetition of verse	G69b) Repetition of verse

C57b) Repetition of verse	G85a) Repetition of verse
C79b) Repetition of verse	G89a) Repetition of verse
C94b) Repetition of verse	D9a) Repetition of verse
E10a) Repetition of verse	D15a) Repetition of verse
E14a) Repetition of verse	D30a) Repetition of verse
E22a) Repetition of verse	D51a) Repetition of verse
E43a) Repetition of verse	D72b) Repetition of verse
E49a) Repetition of verse	D149b) Repetition of verse
E63a) Repetition of verse	D170a) Repetition of verse
E70a) Repetition of verse	F20a) Repetition of verse
E92a) Repetition of verse	F43b) Repetition of verse
E105a) Repetition of verse	F55a) Repetition of verse
E121a) Repetition of verse	F72a) Repetition of verse
E144a) Repetition of verse	F81a) Repetition of verse
H25a) Repetition of verse	F102b) Repetition of verse
H40a) Repetition of verse	F110a) Repetition of verse
H44a) Repetition of verse	F137a) Repetition of verse
H561a) Repetition of verse	F153a) Repetition of verse

H66a) Repetition of verse	I10a) repetition of verse
H75a) Repetition of verse	I30a) Repetition of verse
H77a) Repetition of verse	I48a) Repetition of verse
H79b) Repetition of verse	I61a) Repetition of verse
H89b) Repetition of verse	I86a) Repetition of verse
H97a) Repetition of verse	I102a) Repetition of verse
H110b) Repetition of verse	I109a) Repetition of verse
H120a) Repetition of verse	K14a) Repetition of verse
H123a) Repetition of verse	K16b) Repetition of verse
H128a) Repetition of verse	K19a) Repetition of verse
J9a) Repetition of verse	K36b) repetition of verse
J27a) Repetition of verse	K45a) Repetition of verse
J43a) Repetition of verse	K50a) Repetition of verse
J54a) Repetition of verse	K72a) Repetition of verse
J71a) Repetition of verse	K76a) Repetition of verse
J79a) Repetition of verse	K79a) Repetition of verse
J87a) Repetition of verse	K98b) Repetition of verse
L19a) Repetition of verse	B65b) Repetition of chorus

L30a) Repetition of verse	B99a) Repetition of chorus
L36b) Repetition of verse	G41a) Repetition of chorus
L44a) Repetition of verse	G73a) Repetition of chorus
L47a) Repetition of verse	D36a) Repetition of chorus
L54a) Repetition of verse	D103a) Repetition of chorus
L61a) Repetition of verse	D111a) Repetition of chorus
L70a) Repetition of verse	D135d) Repetition of chorus
L75b) Repetition of verse	D162a) Repetition of chorus
L83b) Repetition of verse	F27a) Repetition of chorus
L88b) Repetition of verse	F65a) Repetition of chorus
A54b) Repetition of chorus	F89a) Repetition of chorus
A62a) Repetition of chorus	F117a) Repetition of chorus
A67a) Repetition of chorus	F145a) Repetition of chorus
A77a) Repetition of chorus	I26a) Repetition of chorus
C52a) Repetition of chorus	I34a) Repetition of chorus

C61b) Repetition of chorus	I54a) Repetition of chorus
C72b) Repetition of chorus	I75a) Repetition of chorus
C100b) Repetition of chorus	I94a) Repetition of chorus
E16a) Repetition of chorus	I106a) Repetition of chorus
E70b) Repetition of chorus	K27a) Repetition of chorus
E82a) Repetition of chorus	K55a) Repetition of chorus
E120a) Repetition of chorus	K62a) Repetition of chorus
E141a) Repetition of chorus	K70a) Repetition of chorus
H48a) Repetition of chorus	K83a) Repetition of chorus
H68a) Repetition of chorus	K87a) Repetition of chorus
H84a) Repetition of chorus	B8b) Repetition of verse line
H87a) Repetition of chorus	B36a) Repetition of two verse lines
H121a) Repetition of chorus	B58a) Repetition of chorus line
H136b) Repetition of chorus	B64a) Repetition of chorus line

J12a) Repetition of chorus	B68a) Repetition of chorus line
J46a) Repetition of chorus	B73a) Repetition of chorus line
J85a) Repetition of chorus	B81a) Repetition of chorus line
L24a) Repetition of chorus	B83b) Repetition of chorus line
L40a) Repetition of chorus	B86b) Repetition of chorus line
L66a) Repetition of chorus	
L87a) Repetition of chorus	

**Appendix AK: Seeing and doing**

Table 1

Seeing and doing			
<u>Participant physical imitation of PCS</u>		<u>Participant physical imitation of therapist and others</u>	<u>Participant physical imitation of therapist and others</u>
L13a) Indiv participant imitate movement of a grizzly bear		E125a) Indiv copies other indiv cupping of hands singing	B24a)Indiv Participant physically imitating other indiv

			unrelated movement
C24a) Participant imitate PCS by swimming like a shark		E135a) Participants imitate physical body movement of therapist	B54a) Group imitates indiv participants movement with enthusiasm
C37a) Indiv participant imitates PCS by pointing to himself		C84a) Indiv participant imitates therapist movement of strumming guitar	B80a) Two participants imitate therapist's movement
C103a) Indiv participant imitated PCS by waving movement		C89a) Indiv participant imitates therapist movement of strumming guitar	D66a) Indiv participant imitate therapist's strumming
E91a) Indiv participant imitate movement of a crab		C98a) Indiv participant imitates therapist guitar playing	D107b) Participants imitating physical movements from each other
H23b) Indiv imitate PCS by pointing to herself		C104a) Indiv participant imitates therapist movement of playing guitar	F33a) Participants imitate vigorous body movements from each other
H136a) Indiv participant imitate the trunk of an elephant		E57b) Indiv participant imitates therapist by directing attention to PCS	F48a) Indiv imitates therapist rocking movement with nodding of head
J10a) Indiv imitate intended PCS by pointing to herself		H132a) Participants imitate therapist rocking movements	F68b) Participants imitate therapist by pretending to play guitar
J42a) Indiv imitates PCS by pointing to herself			F136a) Indiv copies therapist's playing of the guitar with

			physical imitation
J58a) Indiv imitate PCS by pointing to herself			I35b) Indiv imitates therapist by nodding head to pulse of music
L10d) Indiv participant imitate the trunk of an elephant			I63a) Participants imitates therapist rocking movement
L26a) Indiv participant imitate the trunk of an elephant			I71a) Participants imitate therapist's slow upper body rocking movement
L42b) Indiv imitates the movement of a horse			I89g) Indiv imitates therapist's rocking body movement
C8a) Indiv participant imitates PCS by pointing downwards			K66a) Indiv imitate other indiv physical movements associated with animal in song
C9b) Indiv participant imitates PCS by pointing to himself			
A41a) Indiv participant imitates PCS by pointing to himself and imitate swimming fish			
L9d) Indiv participant imitates PCS by waving hello			
L16a) Indiv imitates PCS of slithering snake			

Table 2

Seeing and doing			
<u>Participant vocal imitation of therapist and others</u>	<u>Participant vocal imitation of therapist and others</u>	<u>Participant vocal imitation of PCS</u>	
L15a) Participants imitate therapist vocal sound	G39a) Participants imitate vocal sound of therapist	H58b) Indiv imitate vocal sound of animal being greeted	
J26b) Participants imitate therapist's vocal sound		L10e) Indiv imitate vocal sound of animal being greeted	
		L27a) Indiv imitate vocal sound of animal being greeted	
		H58b) Indiv imitate vocal sound of animal being greeted	
		H74a) Indiv imitate vocal sound of animal being greeted	

**Appendix AL: Word concept formulation**

Table 1

Word concept formulation					
<u>Lyrics associated with real life events/memories</u>	<u>Lyrics associated with real life events/memories</u>	<u>Association of intended meaning of lyrics with movement</u>	<u>Association of intended meaning of lyrics with movement</u>	<u>Association of intended meaning of lyrics with vocal sounds</u>	<u>Association of intended meaning of lyrics with vocal sounds</u>
	B2a) Two individuals associated with real life memories		B28a) Indiv Associate intended lyrics with movement of an animal		K65a) Indiv participant make animal vocal sounds with therapist
	B53b) Indiv participant associates song with animal in real life		B53a) Indiv participant imitate animal movement		K65b) Other indiv join therapist and indiv with vocal imitation of animal sound
	B55b) Indiv participant verbally makes own interpretation and description of animal		B113b) Two Indiv imitate animal movement		B71a) Indiv imitate animal verbal sounds
	B55a) Indiv verbally associates lyrics with real life animal		B113c) Two Indiv associate imitation of animal movement with song		H30b) Indiv imitate vocal sound of animal

	B57b) Indiv associates animal with color		G30a) Indiv imitate movement of animal		G32e) Indiv imitate movement and vocal sound of animal
	B72a) Indiv participant associates song with animal in real life		G32e) Indiv imitate movement and vocal sound of animal		G34a) Indiv imitates physical movement and vocal sound of animal
	B72b) Indiv participant makes own interpretation and description of animal		G34a) Indiv imitates physical movement and vocal sound of animal		G40a) Indiv imitates physical movement and vocal sound of animal
	B101b) Participant associates color of with animal		G40a) Indiv imitates physical movement and vocal sound of animal		G48a) Indiv imitate vocal sound of animal with high energy and playfulness
	B108a) Participants eagerly verbally explain lyrics to therapist		D25a) Indiv participant imitate animal movement		G79b) Indiv associate lyrics to real life animal sounds
	G14a) Indiv gives correct intended meaning of the songs theme		D81d) Indiv physically imitate lyrics of the song by waving		G82a) Indiv imitates animal vocal sound loudly and energetically

	G17a) Indiv associate theme of song with a film		D167b) Indiv participant physically imitate lyrics		K67b) Indiv imitate vocal sound of animal
	D25c) Indiv associates own related meaning to song theme		F8b) Indiv imitate movement of animal in song		K70c) Indiv imitate vocal sounds of an animal loudly and energetically
	D145c) Indiv associates lyrics with real life animal		K65c) Indiv imitate physical movements associated with animal in song		K85b) Indiv imitate vocal sound of animal
	F13c) Indiv pretends to hold related object to theme of the music		K67a) Indiv imitate physical movements associated with animal in song		K88e) Indiv makes vocal imitation of animal sounds
			K86c) Indiv imitates animal movement energetically		K90a) Indiv eagerly responds with physical and vocal imitation of animal
			K90a) Indiv eagerly responds with physical and vocal imitation of animal		K94a) Participants eagerly answer therapist with physical and vocal imitations of animals in the song

			K94a) Participants eagerly answer therapist with physical and vocal imitations of animals in the song		K95a) Participants respond with physical movements and vocal imitations of animal in song
					K96a) Participants take part in activity with enthusiasm and over exaggerated vocal sounds
					K97a) Participants exaggerates imitation of vocal animal sound playfully

**Appendix AM: Learning process in sessions**

Table 1

Learning process in sessions					
<u>Facial expressions</u>	<u>Facial expressions</u>	<u>Participants laugh</u>	<u>Participants laugh</u>	<u>Participants misunderstands therapist's verbal instructions/invita</u>	<u>Participants misunderstanding of therapist's verbal instructions/invitati</u>

				<u>tions</u>	<u>ons</u>
A14c) Blunted facial expressions	B8c) Participants blunted facial expressions		B15a) Indiv giggles	E32a) Indiv participant misunderstands therapist invitation to strum guitar	K85a) Indiv misunderstand therapist instructions to sing animal names
A28d) Blunted facial expressions	B12c) Blunted facial expressions		D98a) Participants respond with giggling	E35a) Indiv participant confused by therapist's instructions	K88a) Two participants confused about lyrical change
A32c) Blunted facial expressions	B27c) Blunted facial expressions		D156b) Participants express joy by giggling	E39a) Indiv participant unsure of verbal instruction of pointing PCS	K88d) Two indiv unsure of instructions to imitate animal vocal sounds
A39c) Blunted facial expressions	B32e) Blunted facial expressions		D159a) Participants express joy and excitement through laughter	J49a) Indiv confused by therapist's invitation	
A57c) Blunted facial expressions	B36b) Blunted facial expressions		D161c) Participants smile and laugh		
A62e) blunted facial expressions	B43d) blunted facial expressions		F30a) Participants laugh and smile widely		

A68c) Blunted facial expressions	B48e) Blunted facial expressions		F39a) Participants laugh and smile widely		
A85c) Blunted facial expressions	B76b) Participants facial expressions shift from blunted to smiling		F53a) Two indiv laugh loudly at other indiv		
C5d) Blunted facial expressions	B82b) Indiv blunted facial expression		F59a) Participants laugh and smile widely		
C22b) Blunted facial expression	B122a) Participants blunted facial expressions		F68a) Participants smile and laugh loudly		
C51c) Blunted facial expressions	G8c) Blunted facial expressions		F79b) Participants laugh loudly		
E7b) Blunted facial expressions	H21c) Blunted facial expressions		F87a) Participants laugh loudly		
E21c) Blunted facial expressions	G29c) Blunted facial expressions		F108a) Participants respond in excitement and laughter		
E27b) Bunted facial expressions	G32g) Participants blunted facial expressions		F115b) Participants respond with excitement and laughter		

E62d) Blunted facial expressions	G46b) Blunted facial expressions		F159a) Participants respond with laughter		
H15b) blunted facial expressions	G50d) Blunted facial expressions		F163a) Participants respond with loud laughter		
H65d) Blunted facial expressions	G58c) Blunted facial expressions		D106a) Participants laugh and smile widely		
H81c) blunted facial expressions	G61b) Participants blunted facial expressions		D134d) Participants smile and laugh		
H91d) Blunted facial expressions	G71a) Participants blunted facial expressions		D143b) Indiv participant expresses joy through laughter and smiling		
J11e) Blunted facial expressions	G75b) Indiv blunted facial expression		D161c) Participants smile and laugh		
J31c) Blunted facial expressions	G78d) Blunted facial expressions				
J67c) Blunted facial expressions	G84b) Participants blunted facial expressions				
J85c) Blunted facial expressions	G87a) Participants blunted facial expressions				

L4c) Blunted facial expressions	D5e) Blunted facial expressions				
L22d) Blunted facial expressions	D12e) Participants blunted facial expressions				
L25b) Sitting indiv has blunted facial expression	D20b) Blunted facial expressions				
L31d) Participants blunted facial expressions	D28c) Blunted facial expressions				
L31c) Therapist blunted facial expression	D33e) Blunted facial expressions				
E87c) Participants have curios facial expressions	D39b) Participants blunted facial expressions				
C22d) Two indiv smile	D48b) Blunted facial expressions				
C23a) Indiv participant smiles widely	D49a) blunted facial expressions				
C39c) Participants smile	D57a) Participants blunted facial expressions				
C95c) Participants smile	D71e) Participants blunted facial				

	expressions				
E80a) Participants facial expression indicate emotions of excitement and joy	I5a) Participants blunted facial expressions				
E80b) Participants smile	I12b) blunted facial expressions				
E94b) Participants smile	I17d) Two participants blunted facial expressions				
E127f) Participants smile	I29b) Blunted facial expressions				
E136b) Indiv facial expression indicate emotions of joy and silliness	I33c) Blunted facial expressions				
H33c) Indiv smiles widely	I37d) Blunted facial expressions				
H96c) Participants smile	I41b) Blunted facial expressions				
H134b) Participants smile	I49e) Blunted facial expressions				

J7c) Participants smile	I104c) Blunted facial expressions				
J38b) Indiv smiles	K7e) Blunted facial expressions				
J54c) Participants smile widely	K18f) Two indiv blunted facial expressions				
J54c) Participants smile widely	K26d) Blunted facial expressions				
J56a) Indiv smiles	K36d) Strumming indiv blunted facial expression				
L10g) Indiv smiles	K72c) Two indiv blunted facial expressions				
L11g) Indiv smiles	K82c) Blunted facial expressions				
L14c) Participants smile	K85e) Participants blunted facial expressions				
L27b) indiv smiles	K96c) Participants blunted facial expressions				
L32c) Indiv giggles and smiles	K97b) Indiv frowns				

L45a) Pointing indiv smiles	F120d) Participants body language and facial expressions indicate anticipation and curiosity				
L48a) Pointing indiv smiles	B53d) Indiv smiles				
L58e) Indiv smiles widely	B76b) Participants facial expressions shift from blunted to smiling				
L86e) Participants smile	B88c) Indiv smiles				
L86c) Sitting indiv smiles and laughs loudly	H30c) Indiv smiles widely				
L90e) Sitting indiv smiles widely	G32h) Indiv smiles widely				
	G43b) Indiv smiles proudly for brief moment				
	G58d) Indiv smiles				
	D12c) Indiv participant portrays emotions of enjoyment through facial expression				

	D12d) Indiv smiles				
	D46c) Indiv smiles				
	D50a) Indiv occasionally smiles				
	D70c) Indiv smiles widely				
	D71f) Indiv smiles when singing				
	D81a) Participants smile widely				
	D89c) Participants smile widely				
	D98c) Participants smile				
	D106a) Participants laugh and smile widely				
	D134d) Participants smile and laugh				
	D143b) Indiv participant expresses joy through laughter and smiling				

	D154d) Participants smile				
	D161c) Participants smile and laugh				
	D165c) Participants smile				
	F11c) Participants smile				
	F12c) Two participants smile widely				
	F19b) Participants smile widely				
	F30a) Participants laugh and smile widely				
	F39a) Participants laugh and smile widely				
	F50g) Participants smile widely				
	F59a) Participants laugh and smile widely				
	F68a) Participants smile and laugh loudly				

	F99b) Indiv smiles				
	F106d) Participants smile				
	F113a) Indiv smiles				
	F116b) Participants smile				
	F122b) Participants smile				
	F127b) Participants smile widely				
	F132c) Participants smile				
	F140b) Participants smile				
	F142b) Participants smile widely				
	F144c) Participants smile				
	I63e) Participants smiles at therapist and				

	each other				
	I60c) Indiv smiles widely				
	I63b) Participants smile				
	I81d) Indiv smiles at therapist and other indiv				
	I85d) Participants cheerfully smile at each other				
	I89f) Indiv smiles widely				
	I97d) Participants smile widely				
	I112d) Participants smile widely				
	I177c) Participants smiles widely				
	K12c) Indiv smiles widely				
	K13b) Indiv smiles				
	K18g) Indiv smiles at				

	therapist				
	K54e) Participants smile widely				
	K66c) Two indiv smile widely				
	K85f) Indiv smiles				
	K96b) Indiv smiles				

Table 2

Learning process in sessions			
<u>Participant body language</u>	<u>Participants body language</u>	<u>Eye contact</u>	<u>Eye contact</u>
A40a) Indiv relaxed body language	B9a) Indiv participant sits in relaxed slouched position	C83a) Participants make eye contact with therapist	B7a) Participants make eye contact with therapist
A63b) Indiv body language indicate excitement and eagerness to participate	B9c) Indiv participant relaxed and comfortable body language	C105c) Participants occasionally make meaningful eye contact with therapist	B53c) Indiv makes meaningful eye contact with therapist

C13a) Participant body language indicate interest and eagerness to participate	B103d) Indiv body language indicate interest and excitement	E79b) Participants make meaningful eye contact with therapist and each other	B55c) Indiv makes eye meaningful contact with therapist
C35b) Participants body language indicate interest and excitement	B106a) Therapist body language is inviting	E89d) Participants make meaningful eye contact with therapist and each other	B76c) Participants occasionally make meaningful eye contact with therapist and each other
C39f) Participants body language indicate interest and excitement	B114e) participants body language indicates eagerness to participate	E127a) Participants make meaningful eye contact with therapist and each other	B97b) Participants make meaningful eye contact with therapist and each other
C56b) Participants body language indicate excitement and eagerness to participate	B122d) Body language shift to still and closed off	E127b) Indiv pointing to PCS make no eye contact with others	B108b) Participants make meaningful eye contact with therapist
C62a) Participants body language indicate excitement and eagerness to participate	D12a) Participants physically respond in robotic manner	E134a) Participants make meaningful eye contact with therapist	B111c) Participants make meaningful eye contact with therapist
E61a) Participants body posture indicate excitement and eagerness to participate	D147a) Participants body language is engaging and indicate eagerness and excitement to participate	H19b) Therapist occasionally make eye contact with participants	G4a) Indiv makes meaningful eye contact with therapist
E66b) Indiv body language indicates excitement and eagerness to participate	F70c) Participants body language indicate eagerness and excitement to participate	H42a) Therapist makes meaningful eye contact with participants	H30f) Indiv makes eye contact with participants

E140a) Participants body posture indicate excitement and eagerness to participate	F120d) Participants body language and facial expressions indicate anticipation and curiosity	H65b) Therapist attempts to make eye contact with participants	G33a) participants make eye contact with therapist
H99c) Indiv moves around in chair suggesting boredom	I52c) Participants body language indicate excitement and eagerness to participate	H77e) Participants make meaningful eye contact with each other and therapist	G58b) Participants make eye contact with therapist
H135d) Participants body posture indicate social engagement and eagerness to participate	I60d) Participants body language indicate excitement, openness and eagerness to participate	J32a) Participants make occasional eye contact with therapist and each other	G71d) Participants make eye contact with therapist
J7d) Participants body language indicate excitement and eagerness to participate	I81f) Indiv body language indicate excitement and eagerness to participate	L14d) Participants make meaningful eye contact with therapist	G78e) Participants occasionally make eye contact with therapist
J21b) Indiv body language indicate excitement and eagerness to participate	I116c) Participants body language indicate excitement and eagerness to participate	L22c) No eye contact between therapist and participants	G88d) Indiv makes eye contact with indiv participants and therapist
J76a) Participants body language indicate excitement and eagerness to participate	K54c) Participants body language indicates excitement and eagerness to participate	L27c) Indiv makes meaningful eye contact with therapist	D5d) Participants occasionally make eye contact with therapist and each other
L11f) Participants body language indicate eagerness and excitement to participate	K86a) Indiv participants body language indicate excitement and eagerness to participate	L32d) Indiv makes meaningful eye contact with therapist	D14b) Participants make eye contact with therapist

L15c) Participants body language indicates eagerness to participate		L48c) Indiv makes meaningful eye contact with therapist	D46d) Indiv makes meaningful eye contact with therapist
L84a) Indiv body language indicate excitement and eagerness to participate		L58d) Indiv makes meaningful eye contact with therapist and participant	D48a) Participants make eye contact with therapist
		L63d) Participants make meaningful eye contact with therapist	D50b) Indiv attempts to make meaningful eye contact with other group member
		L86g) Participants makes meaningful eye contact with therapist	D89e) Participants body language indicate excitement and interest in the music
		L74c) Participants make meaningful eye contact with therapist	D101a) Participants make eye contact with therapist and each other
		L90b) Sitting indiv makes healthy eye contact with therapist	D107a) Participants make meaningful eye contact with therapist and each other
			D117e) Participants make meaningful eye contact with therapist and each other
			D119a) Participants make meaningful eye contact with therapist

			D126c) Participants make meaningful eye contact with therapist
			D129b) Participants make meaningful eye contact with therapist
			D134c) Participants make meaningful eye contact with therapist
			D137a) Therapist makes meaningful eye contact with participants
			D154e) Participants make meaningful eye contact with therapist
			D156c) Participants make meaningful eye contact with therapist and each other
			D159b) Participants make meaningful eye contact with therapist and each other
			D161d) Participants make meaningful eye contact with each other and the therapist

			D172c) Participants make meaningful eye contact with therapist
			D174a) Participants make meaningful eye contact with therapist and each other
			F11b) Participants make eye contact with therapist and each other
			F12d) Individ make meaningful eye contact with therapist
			F16b) Participants make meaningful eye contact with therapist and each other
			F26a) participants make meaningful eye contact with therapist and each other
			F30b) Participants make meaningful eye contact with each other
			F35a) Therapist makes meaningful eye contact with participants
			F41a) Participants make meaningful eye contact with

			therapist and each other
			F42b) Therapist makes meaningful eye contact with participants
			F50f) Participants make meaningful eye contact with therapist and with each other
			F53b) Two participants make meaningful eye contact with indiv
			F60 Participants make meaningful eye contact with therapist and each other
			F67b) Therapist makes meaningful eye contact with participants
			F67c) Participants make meaningful eye contact with therapist
			F70a) Participants make meaningful eye contact with therapist and each other
			F84a) Therapist makes meaningful eye contact with

			indiv
			F85b) Indiv makes meaningful eye contact with therapist
			F88a) Participants make meaningful eye contact with therapist and each other
			F99c) Indiv makes meaningful eye contact with therapist
			F106b) Participants make eye contact with therapist
			F113b) Indiv makes meaningful eye contact with therapist
			F116a) Participants make meaningful eye contact with therapist and each other
			F120c) Participants make meaningful eye contact with therapist
			F122a) Participants make eye contact with therapist

			F124a) Participants make meaningful eye contact with therapist
			F130a) Participants make meaningful eye contact with therapist
			F132a) Participants make meaningful eye contact with therapist
			F140c) Participants make meaningful eye contact with therapist
			F144d) Participants make meaningful eye contact with therapist
			F152c) Participants make meaningful eye contact with therapist and each other
			F158c) Participants make meaningful eye contact with therapist
			I5c) Participants make eye contact with therapist
			I13a) Therapist makes eye

			contact with participants
			I22c) Indiv makes meaningful eye contact with therapist
			I22f) Participants makes meaningful eye contact with therapist
			I25c) Participants make meaningful eye contact with therapist
			I28a) Participants make meaningful eye contact with therapist
			I29a) Therapist make meaningful eye contact with each indiv participant
			I42a) Therapist make meaningful eye contact with each indiv participants
			I46c) Indiv makes meaningful eye contact with other indiv
			I53a) Participants make meaningful eye contact with therapist

			I53d) Participants make meaningful eye contact with therapist
			I59b) Participants make meaningful eye contact with therapist and each other
			I60b) Indiv makes meaningful eye contact with other indiv
			I64a) Therapist makes meaningful eye contact with participants
			I73c) Participants make meaningful eye contact with therapist
			I78b) Participants make meaningful eye contact with therapist and others
			I81e) Indiv makes meaningful eye contact with therapist and other indiv
			I85e) Participants make meaningful eye contact with each other and therapist
			I89e) Participants makes meaningful eye contact with

			therapist
			I93d) Participants make meaningful eye contact with therapist
			I97c) Participants make meaningful eye contact with therapist
			I97e) participants make meaningful eye contact with each other
			I108e) Participants makes meaningful eye contact with therapist
			I112c) Participants make meaningful eye contact with therapist
			I177d) Indiv makes meaningful eye contact with other indiv
			K7b) Participants occasionally make eye contact with therapist
			K13d) Participants make meaningful eye contact with

			therapist
			K15c) Indiv makes meaningful eye contact with therapist
			K18d) Two indiv make eye contact with therapist
			K54d) Participants make meaningful eye contact with therapist and each other
			K66b) Indiv participants make meaningful eye contact with therapist and other indiv
			K69c) Participants makes meaningful eye contact with therapist and each other
			K72d) Participants makes meaningful eye contact with therapist
			K75c) Participants make meaningful eye contact with therapist
			K90b) Indiv makes eye contact with therapist
			K97c) Indiv makes meaningful

			eye contact with therapist
			K100d) Participants make meaningful eye contact with therapist

**Appendix AN: Therapist’s interactive role**

Table 1

Therapist’s interactive role					
<u>Therapist facial expressions</u>	<u>Therapist facial expressions</u>	<u>Therapist body language</u>	<u>Therapist body language</u>	<u>Therapist’s non-verbal interaction</u>	<u>Therapist’s non-verbal interaction</u>
C83b) Therapist has inviting and uplifting facial expression	B7b) Therapist facial expression is cheerful and inviting		B32e) Therapist body language is inviting	A70a) Therapist adds guitar accompaniment	B56a) Therapist imitate participants movement
-	B32d) Therapist smiles		D40e) Therapist body language inviting and high energy	C49a) Therapist support indiv participant musically	I66a) Therapist unpredictable start singing and playing
			F42c) Therapist interacts playfully	C68a) Therapist support indiv participant musically	B33a) Therapist attempts to shift energy of the music
			I53b) Participants dependent on therapist musical cues	H80a) Therapist alternate directing attention to PCS and	B49a) Therapist introduce chorus

			and body language	strumming of guitar	section to participants
			I73a) Therapist body language and facial expression is inviting and open	H90a) Therapist alternate directing attention to PCS and strumming of guitar	D3b) Therapist musically support indiv by adding guitar accompaniment to indiv singing
			I78a) Therapist leans forward to middle of group	C49c) Therapist presses guitar chords	F65b) Therapist continues music unexpectedly
			I99d) Therapist uses body language to indicate musical cues	H22a) Therapist nonverbally confirm indiv answer by repeating the word	F114a) Therapist suddenly continues the song
			K82f) Therapist uses body language to indicate musical cues	E111b) Therapist non-verbally allows two participants to continue singing with high pitched voices	I66a) Therapist unpredictable start singing and playing
					K5a) Therapist continue music at a moderately slow tempo
					K25a) Therapist press chords

					G69a) Therapist plays introduction
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Table 2

Therapist's interactive role					
<u>Therapist's verbal interaction</u>	<u>Therapist's verbal interaction</u>	<u>Therapist's non-verbal modeling</u>	<u>Therapist's non-verbal modeling</u>	<u>Therapist's presence</u>	<u>Therapist's presence</u>
J26a) Therapist emphasize "s" sound	B25a) Therapist verbally introduce second line of verse	E56a) Therapist assist indiv participant by modelling pointing to PCSS	B79b) Therapist model hand gesture to participants		D47a) Therapist sings with participants cheerfully
L14a) Therapist emphasize "s" sound	B57a) Therapist verbally explain line	H95b) Therapist models pointing to PCS	D65a) Therapist models strumming of guitar		
L86a) Therapist struggle to match indiv music with voice	B60a) Therapist verbally explain line	L78a) Therapist models guitar strumming			
L87b) Therapist match indiv strumming with voice	B78a) Therapist verbally explain line	H98a) Therapist models pointing to PCS to indiv			

C29a) Therapist sings melody and lyrics loud and clear	B109a) Therapist verbally prepare participants of next sung lyrics	H101b) Therapist models pointing to PCS to indiv			
A11a) Therapist verbally model melody and rhythm of first verse section	G16a) Therapist verbally explain theme of song	J50a) Therapist model by pointing to appropriate PCS			
C93a) Therapist verbally explain song structure to participants	D64a) Therapist verbally acknowledges Indiv participants imitation of a dinosaur				
E111a) Therapist verbally acknowledge indiv wishes	D84a) Therapist verbally acknowledge Indiv participants imitation of a dinosaur				
H89b) Therapist verbally remind participant of new song	D146a) Therapist verbally acknowledge Indiv participant explanation of animal				
H119a) Therapist verbally confronts indiv	F4a) Therapist verbally confirms indiv correct answer of animal				

J9b) Therapist verbally introduce melody	G93a) Therapist verbally acknowledge indiv upset emotions				
J43b) Therapist verbally assist pointing participant by reminding the song form	G3a) Therapist verbally acknowledge indiv concern of absent PCS board				
J46b) Therapist verbally assist pointing indiv	G91a) Therapist verbally explain absence of PCSs				
J54b) Therapist verbally remind pointing indiv of song form	K80a) Therapist verbally explain that lyrics change to animal vocal sounds				
J48a) Therapist verbally thanks volunteer indiv	B46a) Therapist verbally encourage indiv participants to sing				
L80a) therapist verbally count music in	B38a) Therapist count participants in with enthusiasm				
J86a) Therapist verbally remind pointing indiv of song form	G26a) Therapist sings line				

H103a) Therapist verbally acknowledge indiv	K64a) Therapist imitates animal sound alone				
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Table 3

Therapist's interactive role					
<u>Therapist invites participants to read PCS by themselves</u>	<u>Therapist invites participants to read PCS by themselves</u>	<u>Therapist invites individual to strum guitar</u>	<u>Therapist invites individual to strum guitar</u>	<u>Therapist invites individual to point PCSS</u>	<u>Therapist invites individual to point PCS</u>
L11a) Therapist invites participants to read PCS by themselves		C43a) Therapist invite indiv participant to strum guitar	D58a) Therapist invite indiv participant to strum guitar	C91a) Therapist invite indiv participant to point to PCSS	
L12a) Therapist invite participants to read PCS by themselves		C55a) Therapist invite participants to volunteer strumming the guitar	D61a) Therapist verbally invite indiv participant to strum guitar	E31a) Therapist invite indiv participant to point to PCS	
L51a) Therapist verbally invite participants to read PCS by themselves		C57a) Therapist verbally invite indiv participant to strum the guitar	D73a) Therapist invite indiv participant to strum	E38a) Therapist invite indiv to point PCS	
E129a) Therapist invites participants to read PCS by themselves		C61a) Therapist invite participants to volunteer strumming of guitar	D82a) Therapist invite indiv participant to strum guitar	E101a) Therapist invite indiv participant to point PCS	

		C63a) Therapist invite indiv participant to strum guitar	D84b) Therapist invite indiv to strum guitar	E114b) Therapist verbally invite indiv to point to PCS	
		C69a) Therapist invite indiv participant to strum guitar	D91a) Therapist invite indiv participant to strum guitar	E121c) Therapist verbally invite indiv to point PCS	
		C72a) Therapist invite indiv participant to strum guitar	K19b) Therapist invite indiv participant to strum guitar	H94a) Therapist invite indiv participant to point PCS	
		E33b) Therapist invite participant to strum guitar	K27c) Therapist invite indiv participant to strum guitar	J34a) Therapist invite indiv participant to point PCS	
		L77a) Therapist invite indiv participant to strum guitar	K36a) Therapist invite indiv participant to strum guitar	J48b) Therapist invite indiv to point PCS	
		L83a) Therapist invite indiv participant to strum guitar		J63a) Therapist invite participant to point PCS	

		L88a) Therapist invite indiv participant to strum guitar		L18a)Therapist invite indiv participant to point PCS	
				L33a) Therapist invite indiv participant to point PCS	

Table 4

Therapist's interactive role					
<u>Therapist invites individual/ participants to sing</u>	<u>Therapist invites individual/ participants to sing</u>	<u>Therapist verbally affirms participants participation</u>	<u>Therapist verbally affirms participants participation</u>	<u>Therapist verbally speak lyrics</u>	<u>Therapist verbally speak lyrics</u>
A12a) Therapist invite participants to sing	B8a) Therapist invite participants to sing	H125a) Therapist verbally affirm participants response	B102a) verbally affirms participants for associating the animal with a color	J6b) Therapist read PCS words out loud	
A18a) Therapist invite participants to sing	B17a) Therapist invite participants to sing	H142a) Therapist verbally affirm indiv	B123a) Therapist verbally affirms participants at the end of the song for their		

			efforts		
A35a) Therapist verbally invite participants to sing	B20a) Therapist invite participants to sing	J15b) Therapist verbally affirm indiv	D44a) Therapist verbally affirms indiv for remembering the animal		
A54a) Therapist invite participants to sing	B29a) Therapist invite participants to sing	J62a) Therapist verbally affirm indiv	D90a) Therapist verbally affirms indiv participant for strumming the guitar		
A58a) Therapist invite participants to sing	B37a) Therapist verbally invite indiv participants to sing	J93a) Therapist verbally affirm indiv pointing indiv	D102a) Therapist verbally affirms indiv participant for strumming the guitar		
C79a) Therapist verbally invite participants to sing	B45a) Therapist verbally invite participants to sing	L91a) Therapist verbally affirm indiv	G15a) Therapist verbally affirms indiv for remembering the songs theme		

E128a) Therapist invite participants to sing	B62a) Therapist verbally invite participants to sing	E148a) Therapist verbally affirm	G44a) Therapist verbally affirms participant for remembering the animal		
H31a) Therapist verbally invite participants to sing	B64b) Therapist invite participants to sing	A88a) Therapist verbally affirm	G67a) Therapist verbally affirms participants for remembering the song		
H36a) Therapist verbally invite participants to sing	B83a) Therapist invite participants to sing		I17a) Therapist verbally affirms indiv for remembering lyrics		
H59a) Therapist verbally invite participants sing	B86a) Therapist verbally invite participants to participate		K4a) Therapist verbally affirms indiv for remembering the lyrics		
H114a) Therapist verbally invite participants to sing	G19a) Therapist invite participants to sing		K27b) Therapist verbally affirms indiv for strumming the guitar		
H127a) Therapist verbally invite participants to sing	G24a) therapist verbally invite participants to sing		K43a) Therapist verbally affirms indiv for strumming the guitar		

J70a) Therapist verbally invite participants to sing	G41b) Therapist verbally invite participants to sing		K61a) Therapist verbally affirms indiv for imitating an animal sounds		
J78a) Therapist verbally invite participants to sing	G68a) Therapist verbally invite participants to sing		K91a) Therapist verbally affirms indiv for imitation of an animal sound		
L23b) Therapist verbally invite indiv participant to sing	D9b) Therapist invite participants to sing		K98a) Therapist verbally affirms participants for accurate vocal imitation of animal sounds		
L29a) Therapist verbally invite pointing indiv to sing	D40a) Therapist invite participants to sing by themselves				
L73c) Therapist verbally invite participants to sing	D45a) Therapist invite participants to sing by themselves				
	D80a) Therapist verbally invite participants to sing				
	D92a) Therapist invite participants to sing				

	D111c) Therapist invite participants to sing by themselves				
	Therapist invite participants to sing by themselves				
	I21a) Therapist invite participants sing by themselves				
	K34f) Therapist invite participants to sing				
	K79b) Therapist invite indiv participant to sing				
	K9a) Participants invited to sing by themselves				

Table 5

Therapist's interactive role					
<u>Therapist verbally reminds participants of lyrics</u>	<u>Therapist verbally reminds participants of lyrics</u>	<u>Therapist verbally speak lyrics</u>	<u>Therapist verbally speak lyrics</u>	<u>Therapist invites individual/ participants to imitate vocal sounds</u>	<u>Therapist invites individual/ participants to imitate vocal sounds</u>

	B87b) Therapist give verbal reminder of lyrics for chorus		G25a) Therapist verbally tell participants lyrics of chorus		K89a) Therapist invite indiv to imitate animal vocal sound
	B89a) Therapist give verbal reminder of lyrics for chorus		G28a) Therapist verbally tell participants lyrics of chorus		K93a) Therapist invite participants to make vocal imitations of animals
	B105a) Therapist give verbal reminder of lyrics of chorus		G31a) Therapist verbally speak lyrics for chorus		
	B109a) Therapist give verbal reminder of lyrics of chorus		G37a) Therapist verbally speak lyrics for chorus		
	B112a) Therapist give verbal reminder of lyrics for chorus				
	D26a) Therapist verbally remind participants of lyrics for chorus				

	D140a) Therapist verbally remind indiv of lyrics for chorus				
	I24a) Therapist give vocal imitation as reminder of the lyrics for chorus				
	K87b) Therapist verbally remind participants of lyrical changes to vocal sounds for chorus				
	D169f) Therapist remind participants of lyrics for chorus				

Table 6

Therapist's interactive role			
<u>Therapist asks participants song related questions</u>	<u>Therapist asks participants song related questions</u>	<u>Therapist invites individual to point PCS</u>	<u>Therapist invites individual to point PCS</u>

	B52a) Therapist ask participants what an octopus looks like	C91a) Therapist invite indiv participant to point to PCS	
	B60b) Therapist ask participants if they all know what a shark is	E31a) Therapist invite indiv participant to point to PCS	
	B70a) Therapist ask participants what is a jellyfish	E38a) Therapist invite indiv to point PCS	
	B100a) Therapist ask participants which animal is greeted first	E101a) Therapist invite indiv participant to point PCS	
	D15b) Therapist asks participants which verse line is sung next	E114b) Therapist verbally invite indiv to point to PCS	
	D24a) Therapist ask participants which animal is greeted next	E121c) Therapist verbally invite indiv to point PCS	

	D144a) Therapist ask participants which animal is greeted next	H94a) Therapist invite indiv participant to point PCS	
	F119a) Therapist asks participants what we sing after the verse section	J34a) Therapist invite indiv participant to point PCS	
	G13a) Therapist ask participants ask what the song is about	J48b) Therapist invite indiv to point PCS	
	G42a) Therapist ask participants which animal is greeted next	J63a)Therapist invite participant to point PCS	
	G49a) Therapist ask participants which animal is greeted next	L18a)Therapist invite indiv participant to point PCS	
	G74a) Therapist ask participants which animal is greeted next	L33a) Therapist invite indiv participant to point PCS	

	I1a) Therapist ask participants what the song is about		
	I15a) Therapist ask participants which animal is greeted		
	I18a) Therapist ask participants which animal is greeted next		
	K60a) Therapist ask participants what the animal sounds like		

**Appendix AO: Participant quality of participation**

Table 1

Participant quality of participation					
<u>Participant quality of guitar strumming</u>	<u>Participant quality of guitar strumming</u>	<u>Confidence</u>	<u>Confidence</u>	<u>Spontaneous</u>	<u>Spontaneous</u>

C73a) Indiv participant strums guitar gently	D66b) Indiv Participant strums guitar gently	A57b) Participants sing with more confidence	H27a) Participants sing loudly and with confidence	A49b) Participants spontaneously shout word representing PCS	B24b) Indiv participant spontaneously sings
C64a) Indiv participant strums guitar gently	D67a) Indiv participant strums lively and fast	C6c) Participants sing with confidence	G29a) Participants and therapist sing loudly and with confidence together	A27b) Indiv spontaneously says intended PCS	B61a) Indiv participant responds spontaneously
L84b) Indiv strums guitar with force and at a presto tempo	D69a) Perseverative quality to indiv strumming	E3d) Indiv sings with confidence	G46a) Participants sing with confidence	A49b) Participants spontaneously sing intended PCSS	B101a) Indiv spontaneously shouts out an answer
L85b) Indiv use all fingers of both hands to strum guitar	D71d) Indiv participant strum guitar with big arm movements	H135e) Participants sing with confidence	G86a) Participants sing loudly and with confidence	A52c) Participants spontaneously shout intended PCS	D16a) Indiv participant spontaneously shouts answer
L89b) Indiv strumming is lively and moderately fast	D76a) Indiv participants strumming has rich tone quality	J14c) Indiv shouts answer cheerfully and with confidence	D117a) Participants sing with confidence and in a playful manner	A64a) Participant sings loudly and spontaneously	D25b) Indiv participant spontaneously shouts out related word to theme of the song
L89a) Indiv strum guitar rhythmically with steady beat	D78a) Indiv participant strums loud and clear	J28b) Participants sing with confidence	D117b) Participants sing with confidence	A53b) Participants spontaneously shout intended PCS	D75a) Indiv participant strums guitar spontaneously
L79c) Indiv focus on strumming guitar	D85a) Indiv participant strums guitar with force	J41a) Indiv participant sings louder and with	D154c) Indiv participant sings with confidence	C19b) Participants spontaneously shouts intended PCS	D112a) Indiv participant spontaneously

		confidence		meaning	shouts out incorrect animal name
L89c) Strumming indiv focus on strumming	D93a) Indiv participant strums guitar slowly and gentle	J57a) Participants sing with enthusiasm and confidence	D160d) Indiv participant sings with confidence and fast paced	C95a) Indiv participant spontaneously sings loud and energetic	D138a) Participants spontaneously shout out animal names in anticipation
C51b) Indiv strums at a slow and uneven tempo	D93b) Indiv participant alternates hands during strumming	J80b) Participants sing loudly and with confidence	F7b) Indiv sings with confidence	C95a) Indiv participant spontaneously sings loud and energetic	D145a) Indiv participant spontaneously shouts out correct answer
L79a) Indiv strum guitar rhythmically with steady beat	D94a) Indiv participant strums guitar fast and lively	L11d) Participants sing with confidence and loud	F37b) Indiv sings loudly and with confidence	E3b) Indiv participant spontaneously sings song	D167a) Indiv participant spontaneously shouts out animal name
L79b) Indiv strumming is lively and moderately fast	D95a) Indiv participant alternates hands during strumming		F99a) Indiv sing incorrect animal name with confidence	E10b) Indiv participant spontaneously direct attention to PCS	F57b) Indiv sings spontaneously ahead of group
L82a) Indiv strums beat steady	K21a) Indiv slaps guitar strings		F152a) Participants sing with confidence	E55a) Participants spontaneously sing by themselves	F83c) Indiv sings energetically and spontaneously
L85a) Indiv tempo and rhythm of strumming is disorganized and unpredictable	K22a) Indiv strums guitar rhythmically moderately fast and lively		F161b) Participants sings lively and with confidence	E64a) Indiv participant spontaneously direct attention to PCS	F93b) Indiv sings ahead spontaneously and fast paced

	K23a) Indiv strums with force and loudly		I16c) Indiv sings with confidence	E138a) Participants singing is spontaneous, lively and energetic	F112a) Indiv sings unexpectedly and spontaneously
	K24a) Indiv Perseverative strumming		I19c) Indiv sings with confidence and loud	H8a) Indiv spontaneously direct attention to PCS	I16a) Indiv spontaneously answer therapist by singing line
	K25c) Indiv strums uneven tempo		I22a) Indiv sings with confidence	H105a) Other Indiv spontaneously direct attention to PCS	I19a) Indiv spontaneously sings answer
	K29a) Indiv strums guitar gently		I28b) Participants sing with confidence	H113b) Indiv stands up and start pointing spontaneously to PCS	I25a) Indiv spontaneously shouts answer
	K31a) Indiv strums guitar gentle and calmly		I29c) Participants sing lively and with confidence	J5a) Indiv spontaneously sing	K3a) Indiv spontaneously sing line
	K32a) Indiv strum moderately soft		I49f) Participants sing with confidence	J51a) Indiv participant spontaneously directs attention to PCS	K60b) Indiv spontaneously models vocal sound
	K33a) Indiv tempo and dynamics of strumming remain consistent		I58e) Participants sing with confidence	L2d) indiv spontaneously say words	

	K30a) Indiv strums a steady beat		I74b) indiv sing with confidence at a fast paced tempo		
	K34c) Indiv strumming gradually grows louder and more confidently		I81a) Participants sing with confidence		
	K35b) Indiv perseverative strumming		I89a) Participants sing lively and with confidence		
	K38a) Indiv strums irregular unpredictable tempo		I101a) Participants sing by themselves with confidence and high energy		
	K39a) Indiv strums single strings occasionally		I104a) Participants sing with confidence and enthusiasm		
	K40a) Indiv strums irregular and unpredictable dynamics		I108a) Participants sing with therapist with confidence		
	K42a) Indiv strumming gradually grow more steady and predictable		I117b) Indiv shouts last word of the song loudly and confidently		
			K34c) Indiv strumming gradually grows louder and		

			more confidently		
			K85c) Individ imitates vocal sound with confidence		
			K88b) Individ participant respond to music through high energy and confident physical movement		
			K96d) Participant vocal imitations are done loudly and with confidence		

Table 2

Participant quality of participation					
<u>Energy levels</u>	<u>Energy levels</u>	<u>Participant musical flexibility</u>	<u>Participant musical flexibility</u>	<u>Unrelated hand/body gesture and vocal descriptions</u>	<u>Unrelated hand/body gesture and vocal descriptions</u>
A5c) Participants participate with low energy	B8d) Participants engage with low energy	E83a) Participants musically adjust tempo and dynamics	B104b) Participants adjust to tempo and dynamic shift with		B22A) Individ participant make unrelated hand movement suggesting

		of singing	ease		cutting with scissors
A13d) Participants engage with low energy	B36c) Low energy participation and singing	E85a) Participants musically adjust tempo and dynamics of singing	B111b) Participants adjust to tempo and dynamics shift with ease		B23a) Indiv make own association with unrelated hand gesture
A37c) Participants sing with low energy	B114c) Participants sing loudly and energetically	E87a) Participants musically adjust tempo and dynamics of singing	B118b) Participants adjust to tempo and dynamic shift with ease		B24a)Indiv Participant physically imitating other indiv unrelated movement
A68d) Participants engage with low energy	B121b) Indiv swings legs energetically	E142a) Participants musically adjust tempo and dynamics of singing with ease	D172d) Participants adjust to tempo and dynamic shift with ease		D59a) Indiv participant talks about unrelated subject
C80b) Participants sing and participate with high energy	B122c) Sudden energy shift from high to low	E146a) Participants musically adjust tempo and dynamics of singing with ease	D173d) Participants adjust to tempo and dynamic shift with ease		D60a) Indiv participant talk about unrelated subject
34b) Participants sing with high energy and enthusiasm	H21d) Participants singing is low in energy and engagement	L46c) Participants adjust to tempo and dynamics shift with ease	D180b) Participants adjust to tempo and dynamic shift with ease		D60b) Indiv participant makes use of unrelated hand gestures

C95a) Indiv participant spontaneously sings loud and energetic	H30e) Indiv participated with high energy and playfulness	L50b) Pointing indiv adjust to unpredictable tempo change	D182a) Participant adjust to tempo and dynamic shift with ease		D62a) Indiv participant makes use of unrelated hand gestures
C95b) Participants sing with high energy and excitement	G40b) Indiv participates with high energy and playfulness	L58a) Participants quality of voice adjust and match to musical shift with ease	F24a) Two indiv adjust to tempo and dynamic shift with ease		D63a) Indiv participant talk about unrelated subject
C102c) Indiv sing and moves with high energy	G48a) Indiv imitate vocal sound of animal with high energy and playfulness	L86f) Participants adjust to tempo and dynamic shifts and sudden pauses with ease	F46b) Participants adjust to tempo and dynamic shift with ease		D83a) Indiv participant talk about unrelated subject
E6a) Participants engage with low energy	G61a) Participants sing with low energy	L73a) Participants does not adjust well to sudden tempo and dynamic shift	F56a) Participants adjust to tempo and dynamic shift with ease		D83b) Indiv participant makes use of unrelated hand gestures
E66c) Indiv sings and moved with high energy	G64c) Indiv participates with high energy	L75a) Participants does not adjust well to sudden tempo and dynamic shift	F58b) Participants adjust to tempo and dynamic shift with ease		D110b) Indiv participant shouts out unrelated word
E75c) Indiv participates with high energy	G71b) Participants participate with low energy		F63a) Participants adjust to tempo and dynamic shift with ease		B24a)Indiv Participant physically imitating other indiv unrelated movement

H91f) Participants engage with low energy	G79c) Indiv responds with excitement and high energy participation		F79a) Participants adjust to tempo and dynamic shift with ease		
H81b) Participants engage with low energy	D14c) Low energy participation		F94b) Participants adjust to tempo and dynamic shift with ease		
E76b) Two indiv respond with high energy movements	D33c) Participants engage with low energy		F97b) Participants adjust to tempo and dynamic shift with ease		
E77a) Two indiv respond with high energy movements	D49d) Participants low participation and energy levels		F111a) Participants adjust to tempo and dynamic shift with ease		
E79a) Participants respond with high energy movements	D57b) Participants engage with low energy		F126a) Participants adjust to tempo and dynamic shift with ease		
E119a) Indiv hops in chair with high energy	D107c) High energy participation and singing		F142a) Participants adjust to tempo and dynamic shift with ease		
H33b) Participants verbally respond by shouting yes/yay	D117g) High energy participation		F144b) Participants adjust to tempo and dynamic shift with		

energetically			ease		
J11d) Participants low energy	D143a) Indiv participant swings and kick legs energetically		F158a) Participants adjust to tempo and dynamic shift with ease		
J45c) Participants sing with high energy	D152a) Indiv participant wave their arms and swing their legs fast and with high energy		F161a) Participants adjust to tempo and dynamic shift with ease		
J72a) Participants sing lively and energetic	D161b) Participants respond by hopping in chair chairs energetically		I33b) Participants adjust to tempo and dynamic shift with ease		
L4d) Participants engage with low energy	D173c) Participant excitedly and energetically hop in chairs and wave arms		I37b) Participants adjust to tempo and dynamic shift with ease		
L10f) Indiv imitate sound of PCS loudly and playfully	F8a) Indiv swings arms energetically		I49b) Participants adjust to tempo and dynamic shift with ease		
L15b) Participants participate with high energy and excitement	F16a) Participants sing with high energy and enthusiasm		I52a) Participants adjust to tempo and dynamic shift with ease		

L31a) Pointing indiv sings loudly and energetic with therapist	F26b) High energy participation		I58b) Participants adjust to tempo and dynamic shift with ease		
L37c) Indiv sings energetic and lively	F59b) Participants swing limbs with high energy matching the pulse of the music		I77a) Participants adjust to tempo and dynamic shift with ease		
L58b) Participants sing fast paced, energetic and loud	F69a) Participants swing legs with high energy matching the pulse of the music		I80a) participants adjust to tempo and dynamics shift with ease		
L84c) Indiv engages with high energy	F80a) Participants energetically and vigorously swing legs matching the pulse of the music		I82b) Participants adjust to tempo and dynamic shift with ease		
L90a) Sitting indiv sing with therapist with enthusiasm and energetically	F87b) Participants swing legs and wave arms energetically		I85b) Participants adjust to tempo and dynamic shift with ease		
C59d) Participants sing with low energy	F94a) Therapist and participants sing fast paced and energetically		I91a) Participants adjust to tempo and dynamic shift with ease		

	F96a) Participants sing loudly and energetically		I92b) Participants adjust to tempo and dynamic shift with ease		
	96b) Participants swing arms and legs energetically		I93b) Participants adjust to tempo and dynamic shift with ease		
	F101a) Participants swing arms and legs energetically		I99a) Participants adjust to tempo and dynamic shift with ease		
	F109a) Participants swing arms and legs fast and energetically		I101b) Participants adjust to tempo and dynamic shift with ease		
	F112b) Indiv sings energetically and fast paced		I106d) Participants adjust to tempo and dynamic shift with ease		
	F115c) Participants swings arms and legs energetically and vigorously		I114a) Participants adjust to tempo and dynamic shift with ease		
	F126b) Participants swing arms and legs energetically matching		I116a) Participants adjust to tempo and dynamic shift with		

	the pulse of the music		ease		
	F126c) Participants engage with high energy and excitement		K18b) Participants adjust to tempo and dynamic shift with ease		
	F127c) Participants sing loudly and energetically		K48b) Participants adjust to tempo and dynamic shift with ease		
	F135a) Participants swing their arms and legs energetically and excitedly		K58b) Participants adjust to tempo and dynamic shift with ease		
	F141c) Individ sings fast paced and loudly with high energy		K77a) Participants adjust to tempo and dynamic shift with ease		
	F142c) Participants swings arms and legs energetically to the pulse of the music		K78b) Participants adjust to tempo and dynamic shift with ease		
	F151a) Participants quality of voices are lively and energetic		K100c) Participants adjust to tempo and dynamic shift with ease		

	F152d) Participants swing arms and legs energetically		K102a) Participants adjust to tempo and dynamic shift with ease		
	F158b) Participants sing energetic and vigorously		K103b) Participants adjust to tempo and dynamic shift with ease		
	F159b) Participants swing arms and legs energetically matching the pulse of the music				
	F163c) Participants swings arms and legs energetically				
	F164b) Participants hop in their chairs energetically and with excitement				
	I8b) Low energy and flat quality of singing				
	I13e) Participants sings softly with low energy and flat voices				
	I20a) therapist and participants sing cheerfully, loud with				

	high energy				
	I25b) Participants sing energetically and loud				
	I37c) participants engage with low energy				
	I41c) Physical movement indicate low energy				
	I45a) Participants match music with high energy singing				
	I60a) Indiv Participant flops hands in the air energetically				
	I62a) Participants sing loudly and energetic				
	I69a) Indiv participant flops arms in the air energetically				
	I69a) Indiv participant flops arms in the air energetically				

	I72b) Participants participate with high energy				
	I74c) Participants participate with high energy				
	I97a) Participants sing with high energy and enthusiasm				
	I101a) Participants sing by themselves with confidence and high energy				
	I103b) participants sing lively and energetic				
	I116e) Participants quality of voice is strong and energetic				
	K8b) Indiv taps fast and energetic rhythm on his chair				
	K13e) Participants sing energetically and excitedly				

	K17b) Indiv energetically hops in his chair				
	K26e) Participants low energy singing				
	K34d) Indiv taps main pulse on his chair loudly and energetically				
	K42d) Participants low energy of singing				
	K46a) Indiv sings loudly and with high energy				
	K66d) Two indiv participate with enthusiasm and high energy				
	K70c) Indiv imitate vocal sounds loudly and energetically				
	K86c) Indiv imitates animal movement energetically				

	K88b) Indiv participant respond to music through high energy and confident physical movement				
	K96e) Participants engage with high energy				
	K100g) Participants sing with low energy				
	F10b) Participants participate with high energy				

Table 3

Participant quality of participation			
<u>Individual verbally invites participants to sing</u>	<u>Individual verbally invites participants to sing</u>	<u>Engagement levels</u>	<u>Engagement levels</u>
J82b) Indiv verbally invite other indiv to sing		C5b) Participants sing with enthusiasm	B19b) Low energy participation and singing

		C17c) Participants sing with enthusiasm	B30b) Participants low participation levels
		C29c) Participants sing loudly and with excitement	B34a) Few participants sing with therapist
		34b) Participants sing with high energy and enthusiasm	B36c) Low energy participation and singing
		C35a) Participants respond in excitement	B74a) Participants sing with enthusiasm and higher energy
		C45a) Individ eager to participate	B82a) Participants do not sing
		C80b) Participants sing and participate with high energy	B88b) Individ sings alone
		C95b) Participants sing with high energy and excitement	B98b) Individ participant responds spontaneously and playful

		C104a) Participants sing excitedly and loud	B104a) Participants respond excitedly to dynamic shift
		E13b) Indiv join group singing	B107a) Participants respond with excitement
		E102a) Indiv eager to point to PCS	B111a) Participants respond excitedly to dynamic shift
		E107b) Participants response indicate emotions of joy and silliness	G8a) Participants seem eager to learn lyrics
		H28a) Participants don't sing	H30e) Indiv participated with high energy and playfulness
		H33a) Participants respond with excitement and eagerness to participate	G34b) Indiv physical and vocal imitation is playful
		H46a) Participants sing louder and faster matching indiv	G40b) Indiv participates with high energy and

		participants singing	playfulness
		H65c) Participants engage in robotic manner	G43b) Individ smiles proudly for brief moment
		C56a) Three participants enthusiastically volunteer to strum the guitar	G48a) Individ imitate vocal sound of animal with high energy and playfulness
		C62a) Participants enthusiastically volunteer to strum the guitar	G71b) Participants participate with low energy
		C92a) Individ eagerly participant agrees to help therapist	G79c) Individ responds with excitement and high energy participation
		E29a) Individ participant kindly offer to help therapist	G82a) Individ imitates animal vocal sound loudly and energetically

		H4a) Indiv participant eagerly volunteers to answer	D14a) Participants respond robotically
		H33b) Participants verbally respond by shouting yes/yay energetically	D20a) Participants respond robotically
		H99a) Two participants sing with therapist with enthusiasm and louder	D39c) Low participation levels
		H113a) Indiv eagerly volunteers to direct attention to PCS	B8d) Participants engage with low energy
		J35a) Participant eager to participate	D49d) Participants low participation and energy levels
		J64a)Indiv volunteer eagerly to participate	D57b) Participants engage with low energy
		J75a) Indiv eagerly volunteers to point PCS	D70a) Indiv participant responds with excitement and joy

		J80a) Pointing participant do not sing	D71b) Participants stop singing
		J91b) Participants sing cheerfully and with enthusiasm	D98b) Participants do not sing
		J92a) Pointing indiv does not sing	D100a) Participants respond with excitement and playful
		L15b) Participants participate with high energy and excitement	D107c) High energy participation and singing
		L21b) Indiv stops singing mid-verse	D115b) Participants hop in chairs energetically to the pulse of the music
		L25c) Sitting indiv does not sing	D117g) High energy participation
		L28a) Therapist and pointing indiv sing together	D125a) Participants respond with expression of laughter and

			enjoyment
		L34a) Individ eager to direct attention to PCS	D132b) Individ participant sings alone
		L39a) Pointing indiv does not sing	D132a) Individ participant ignore musical pause
		L53a) Individ counts to four with therapist	D138b) High level of participation
		L56a) Participants sing with therapist with enthusiasm	D142c) Participants respond in excitement
		L84c) Individ engages with high energy	D154a) Individ participant ignore musical pause
		L86d) Sitting indiv does not sing	D160b) Individ participant ignore musical pause
		C60a) Individ participant does not finish musical	D169b) Participants respond playful and silly

		phrasing	
		J40a) Pointing indiv does not sing	D181a) Participant swing arms and legs excitedly
		L9b) Indiv participates with excitement	F3b) indiv responds with enthusiasm
			F13b) Indiv enthusiastically shouts out related word to the theme
			F17a) Participants shout emphasized words excitedly
			F19c) Participants engage playfully
			F23a) Participants eager to participate
			F26b) High energy participation

			F82a) Participants do not adjust with music
			F83a) Individ energetically sing ahead of participants and therapist
			F92a) Individ sings ahead of therapist and participants
			F106c) Participants participate with excitement
			F108a) Participants respond in excitement and laughter
			F115b) Participants respond with excitement and laughter
			F120b) Participants seem excited
			F126c) Participants engage with high energy and

			excitement
			F135a) Participants swing their arms and legs energetically and excitedly
			F136b) Individ engages playfully
			F141a) Individ sings ahead of group
			F152b) Participants respond with excitement and curiosity
			F164a) Therapist and participants exaggerates final chord by extending the word playfully
			F164b) Participants hop in their chairs energetically and with excitement
			I12a) Robotic response

			I72b) Participants participate with high energy
			I74c) Participants participate with high energy
			I97a) Participants sing with high energy and enthusiasm
			K7c) Robotic response
			K11a) Individ express emotions of enjoyment and playfulness by singing louder
			K15a) Individ express emotions of enjoyment and excitement
			K17a) Individ express emotions of enjoyment and excitement

			K20a) Indiv is eager to participate
			K28a) Indiv is eager to participate
			K34a) Indiv sings along with enthusiasm
			K35a) Indiv strumming does not sing
			K37a) Indiv is eager to participate
			K46c) indiv express emotions of enjoyment and playfulness
			K51a) Indiv respond hops in chairs in excitement
			K53a) Indiv excitedly hops in chair energetically

			K66d) Two indiv participate with enthusiasm and high energy
			K70b) Indiv respond excitedly to music through physical movement
			K86b) Indiv participant jumps up in excitement
			K90a) Indiv eagerly responds with physical and vocal imitation of animal
			K96a) Participants take part in activity with enthusiasm and over exaggerated vocal sounds
			K96e) Participants engage with high energy
			K97a) Participants exaggerates imitation of vocal animal sound playfully

			F10b) Participants participate with high energy
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### Appendix AP: Pronunciation

Table 1

Pronunciation					
<u>Participant pronunciation</u>	<u>Participant pronunciation</u>	<u>Therapist pronunciation of lyrics</u>	<u>Therapist pronunciation of lyrics</u>	<u>Emphasis of words</u>	<u>Emphasis of words</u>
A22a) Mumbling of words	B19a) Mumbling of words		B40c) Therapist pronounce words clearly	J20b) Participants emphasize iconic PCS	
A24c) Mumbling of words	B21c) Indiv mumbles words		B50c) Therapist sing words clearly		
L4b) Indiv mumbles words	B21c) Indiv mumbles words		G7b) Therapist pronounce lyrics clearly		
A27c) Mumbling of words	B27b) Mumbling of emphasized words		G38a) Therapist emphasize vocal "S" sound		
A28b) Participants speak words with monotonic voice tone	B30a) Two participants mumble words softly		G84a) Participants emphasize "s" vocal sound of animal in song		
A48b) Mumbling of words	B32a) Participants sing/mumble words softly		B26a) Therapist emphasize key words		

C59a) Mumbling of words	B35b) Emphasized words pronounced clearest		F123c) Therapist pronounce lyrics clearly		
C71c) Mumbling of words	B43c) mumbling of emphasized words		F123b) Therapist emphasize lyrics		
A68b) mumbling of words	B48b) Participants sing louder and pronounce words clearer		F131b) Therapist pronounce lyrics clearly		
A73c) Clearer pronunciation of words	B48c) Mumbling of some words		131c) therapist emphasize lyrics		
C14d) Clearer pronunciation of words	B63d) Two indiv pronounce words clearer				
C76c) Words pronounced clearly	B65a) Mumbling of words				
C81b) Clear pronunciation of words	B75b) Clear pronunciation of emphasized words				
C99b) mumbling of words	B85a) Emphasized words sung clearest by participants				
E8c) Clear pronunciation of words	B95b) Emphasized words pronounced clearer				

E53d) Words are pronounced clearly	B95a) Mumbling of words				
H39b) participants sing unclear and softly	B114d) Participants pronounce lyrics clearly				
H45a) Mumbling of words	B119b) Words are pronounced clearly				
H66b) mumbling of words	B120b) mumbling of some words				
H77f) Indiv pronounces words clearly	B120d) Participants sings emphasized words loud and clear				
H86c) Participants pronounce words clearly	G8b) Mumbling of words				
H93a) Indiv mumble occasional words softly	G10a) Mumbling of words				
H6a) Unclear speech	G11b) Mumbling of words				
H135c) Mumbling of some words	H21b) Mumbling of lyrics				
H138a) Participants pronounce words clearly	G32c) Mumbling of lyrics				
J11b) Two indiv participants mumble words	G52b) Mumbling of words				
L2e) Indiv pronounce words	G72c) Clear pronunciation of				

clearly	words				
	G84d) Participants pronounce lyrics clearly				
	D7a) Mumbling of non- emphasized words				
	D8a) Emphasized words pronounced clearest by participants				
	D11a) Mumbling of words				
	D13a) Indiv participant mumbles words				
	D28b) Mumbling of words				
	D34a) Indiv Mumbles non emphasized words				
	D35a) Emphasized words sung clearest by participants				
	D54a) Less mumbling of words				

	D55c) Indiv monotonic singing				
	D117d) Mumbling of words				
	D123a) Mumbling of words				
	D163b) Mumbling of words				
	D163e) Emphasized words pronounced clearest				
	D173e) Participants pronounce all words clearly				
	F6b) Participants pronounce lyrics clearly				
	F10a) Participants pronounce words clearly				
	F50e) participants pronounce words clearly				
	F91b) Participants pronounce words clearly				

	F150a) Participants pronounce words clearly				
	I7a) Clear pronunciation of words				
	I58d) Words are pronounced clearly				
	I89c) Participants pronounce lyrics clearly				
	I105b) Participants pronounce lyrics clearly				
	K26c) Mumbling of words				
	K69b) Participants emphasize "s" vocal sound				
	K75d) Participants pronounce words clearly				
	K82e) Mumbling of words				
	D42a) Indiv participant says animal name clearly				