'From random and fragmented playing to more organised, meaningful forms': an inquiry into rhythm's unique qualities in facilitating such changes in music therapy and their therapeutic significance for clients with complex needs.

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Abstract

Rhythm's unique, organisational qualities, both within a person and inter-relatedly, are the focus of this inquiry. To do this, 'Rhythmic Events' were identified from transcriptions of two videoed music therapy sessions in a series of six, for each of the two research participants, one who has autism and the other, verbal apraxia. A detailed analysis, by three contrasting categorisation processes, was carried out on these 'Rhythmic Events' to answer the research questions. These were concerning what types of 'Rhythmic Events' occur, what patterns emerge, their interpretations and their possible therapeutic significance for participants individually and within communication. The research was done qualitatively by the music therapy student as clinician, data gatherer and researcher within a secondary, educational context when the therapeutic relationships with the two research participants were established. The rationale for the research was provided by the participants who displayed fragmented rhythmic order, combined with an interest in furthering Music Therapy knowledge of rhythm's organisational functions, personally, clinically and collegially. The study findings are that one participant's pulse order began to form from 'within' and some 'Rhythmic Events' were used inter-relatedly as a new, non-verbal language for the participants to use. Stereotypical 'flapping' was found to present as vastly accelerated beating in 'Rhythmic Events' in the second participant. This participant's connecting to an external pulse was found to be disconnecting intermittently. While this participant's responses displayed high levels of musical understanding, he used basic rhythms when inter-relating musically. The emerging focus of this inquiry has been the use of rhythm by both participants to communicate, providing an alternate productive, expressive language. It is hoped this research will facilitate new understanding for readers about rhythm, particularly within Music Therapy process, its acquisition, temporal qualities and vital role in the development of a person individually and in communication.

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1 Introduction

'From random and fragmented beating to more organised, meaningful forms': An inquiry into rhythm's unique qualities in facilitating such changes in music therapy and their therapeutic significance for clients with complex needs.

Rhythm is around us in the natural world in all forms of life. For example it is possible to recognise rhythmic patterns in birthing, suckling, burbling, crying, crawling, rocking, walking, communicating and talking. Rhythm forms part of the body systems and is felt internally, while externally it is a vital aspect of life in tides, seasons, distances, day and night, sounds of nature, time keeping, the life cycle and in maintaining equilibrium in ecological systems. There is an intrinsic order to nature's rhythmic patterns in healthy systems (Warner, 2005).

Rhythm plays a fundamental part in human communication. For example, rhythmic shapes and patterns are first understood in cries and gestural language of infants before they become more organised, controlled or used symbolically. Aldridge (1991) suggests infants may recognise the rhythmic patterns of their mother's communication long before there is comprehension of the words. He believes however that rhythms need to be synchronised from within first for the listener to tap into that emerging rhythmic order. Communication so formed, early in a child's life, is made up of these rhythmically shaped sounds and gestures often exchanged at an extremely fast rate (Robarts, 1996).

Studies comparing music and language find rhythm is common to both. (Besson and Schon, 2001). The temporal nature of rhythm, understood as rhythm organised through time and space, gives it a special place in life generally, music and music therapy. What would it be like not to have, or feel rhythm or be unable to control its order? The rationale for this study was borne out of these questions combined with the researcher's life long interest in the variety and individual nature of rhythmic responses in music making.

This study developed out of the Music Therapy Student's (MTS's) practicum experience within an educational setting. From early assessments, two clients, one with autism and the other with verbal apraxia, were noted as using unusual beating to music, but in different ways. One client for example did not appear aware of an internal or external

pulse, while the other client's established pulse order accelerated into seeming chaos followed by withdrawal from the activity. Autism affects the person's ability to interact and communicate socially and also their ability to understand imaginative play (Wing, 1976), while verbal apraxia affects the person's planning and organisation for language production, speech. Clinical work with these two clients formed the basis for their participation in this research inquiry into rhythmic order. Naturalistic observations and analysis of the data collected for this inquiry, from music therapy sessions, are qualitative. In the type of study being presented, the researcher becomes part of the process with the methodological framework of 'Naturalistic Inquiry' acknowledging integral complex, subjective issues.

The key terms of the project, pulse, rhythm, 'Rhythmic Events' and music therapy will be defined briefly.

"A *pulse* is a division of time into equal, recurring segments which are marked off by equally significant events...a pleasurable equilibrium similar to the intrauterine experience of the mother's heartbeat" (Bruscia, 1987, p. 450). For clarity, throughout this inquiry, 'pulse' will be the term used as defined above forming part of the musical element known as 'rhythm', while 'beat' is used for a bodily movement showing rhythm.

Rhythm is concerned with the description and understanding of sound duration and patterns. As music occurs in time, all music has therefore some manner of rhythm. There does not appear to be one definition that accounts for all aspects of rhythm. Parncutt (1994) defines musical *rhythm* as "an acoustic sequence evoking a sensation of pulse, where pulse is a form of expectancy. Once a pulse sensation is established, events are 'expected' at equal time intervals" (Aldridge, 1999, p 453).

Music Therapy has many different meanings for different people and contexts. One definition is offered here from the United Kingdom professional body,

> Music therapy provides a framework in which a mutual relationship is set up between client and therapist. The growing relationship enables changes to occur, both in the condition of the client and in the form that the therapy takes...By using music creatively in a clinical setting, the therapist seeks to establish an interaction, a shared musical experience leading to the pursuit of therapeutic goals. These goals

> are determined by the therapist's understanding of the client's pathology and personal needs.
>
> (APMT, 2000a)

While rhythm, with its pulse forming temporal order and expectancies intrinsically connected, is the focus for this study, a broader and also more detailed understanding of rhythm and its function may emerge during this inquiry. The findings for this inquiry are sought through '*Rhythmic Events*' (REs), taken broadly by the researcher to include any behaviour (musical or personal) that appeared to be in response to, related to, or initiated by the rhythmic activities included in the music therapy sessions.

Two clinical assumptions were made early in this inquiry. First that the dysrhythmic beating was linked to the disorders of both these young people and secondly, by working towards establishing and maintaining synchronisation of movement to a rhythmic pulse there would be a beneficial effect on the participants' organisational systems for further use with individual, specific goals.

While acknowledging the unique quality of rhythm for its therapeutic use in the expressive realm, this research inquiry is focusing on rhythm's organisational qualities. This quality attributed to rhythm was put succinctly by Gaston (1968) in a now famous quote, " When music from all the cultures of the world are considered, it is rhythm that stands out as most fundamental" (p.17). Inasmuch as music can be divided into separate parts, this inquiry views rhythm through its potential as a therapeutic tool in working towards the well-being of the two research participants.

The body of the research study is organised into four main sections commencing with a literature review. This section includes studying rhythm as an element, its unique qualities and their role in developmental aspects of a person. These unique qualities of rhythm are also viewed for their relevant use in MT, specifically when working with people who have autism and/or verbal apraxia. The Method section details the context of the study, methodology for the inquiry, 'naturalistic inquiry' and procedures relating to the data collection and treatment. Findings are based primarily on detailed analysis of the 'Rhythmic Events' (REs) extracted from transcribed videoed music therapy sessions with the two participants. This is followed by a discussion on these findings before concluding.

The key questions of this exploratory study are:

1) What kinds of 'Rhythmic Events' are identified in a sequence of sessions with two clients?
2) What patterns emerge from the identified events?
3) Can interpretations be made from these patterns of rhythmic interactions, between the MTS and client, on the participant's manner of communicating?
4) What, if any, therapeutic implications can be deduced from these interpretations?

2 Literature review

The focus of this inquiry is on rhythm's organisational qualities. To understand more about rhythm the MTS/researcher worked with the two young people, Participant known as J for this study with a diagnosis of autism and Participant K who has verbal apraxia. These two Participants presented with specific but different rhythmic disorganisation.

The following literature review explores rhythm's position within music, its unique, qualities, acquisition, developmental functions and application within MT. A background to autism and apraxia will be explored briefly alongside MT with people with these two conditions. While the emphasis is on MT literature, other disciplines explored are Speech and Language Therapy, Psychology, Medicine, Neurologic rehabilitation and Early Childhood Development. The bulk of information viewed is from the 1980's to current times.

2.1 Unique qualities of rhythm

Rhythm as an elemental part of music

What role does rhythm play within music and how fundamental is it to the whole? These are the kinds of questions this section is exploring. "Most music is made up of a complex web of expressively organised sounds" (Bunt, 1994, p.46). He suggests that while this complex web is woven by rhythm, melody and harmony as the 'musical elements' it is evident by his use of the word 'web' that Bunt considers the threads of music to be woven individually, yet bound and working together making the whole.

Breaking down of music into its components, if it is possible, is considered arbitrary and functions primarily for convenience (Bunt, 1994). Many researchers tease out the elements of music to investigate the functions of and responses to music, out of which a greater understanding of the whole is anticipated. Gaston (1968) considers rhythm to be the most fundamental aspect of music. It could be argued for example, if the basic elements of music are considered to be melody and rhythm, it is rhythm that stands independent of melody. Melody, in the form of song or chant, intrinsically contains a rhythmic structure

(Cohen, 1994). This gives credence to Gaston's tenet that rhythm is the most fundamental aspect of music.

When studying music's components, Ansdell (1995) turns to the great neurologists, Luria and Sacks who claim that while rhythm has powers to ensure continuity of movement it does not provide any 'intrinsic direction' (Ansdell, 1995, p 84). It is melody, Luria and Sacks suggest, that provides intention, at what they suggest is at a higher-level of organisation.

Ansdell further identifies that it was not the acoustic but musical qualities of melody that facilitates intention. He explains this intention by the 'sense' the melody makes, where it's leading and in terms of its tensions and resolutions. It could be argued here that these qualities, suggested as 'intentional aspects' of melody, are closely linked to the harmonic base, connected also with phrasing and rhythm and as such it is music as a whole that facilitates intention. Although many music therapists do explore the various elements of music there is a consensus that it is music as a whole that brings about change in a person (Bunt, 1994; Ansdell, 1995; Aldridge, 1996 and Wigram 2004).

Ansdell (1995) warns that dividing music into its elements can lead to prescribing. He and Wigram (2002) reminds us that it is the music as a whole, not for example just rhythmic entrainment for people who have Parkinson's disease or phrasing for those with asthma, that gives fluency of life and health back to a person. Ansdell (1995) concedes however to the importance of a single element of music, observing that within a music therapy experience, "the aspect of phrasing can, as with rhythm and melody, often be called out in unexpected ways by the overall music experience and can give back to the client a sense of that which is normally lost or weakened" (Ansdell, 1995, p. 85).

Nordoff and Robbins (1985) in their clinical reporting suggest rhythm to be the 'gateway' to melody (Nordoff & Robbins, 1985, p 31) while Gaston (1968) writes that if rhythmic order cannot be established, other elements of music such as melody and harmony, "lose their potency" (Gaston, 1968, p.17).

Although there appears consensus in literature on rhythm at a fundamental, temporal organisational level, there are some contrasting views on which element facilitates an ability to produce vocal sounds. Loewy (2004) concurs with Aldridge (1996) suggesting that speech and movement develop alongside each other. Furthermore, Loewy and Aldridge

consider that a person's ability to feel rhythm internally appears to aid their ability to produce vocal sounds. Nordoff and Robbins (1985) believe the first development in speech formation emerges in singing for some clients, which suggests a close relationship with melody. While remembering Nordoff and Robbins also considered rhythm the 'gateway' to melody, a flow of how vocal sounds and speech might develop in music therapy looks like this:

Organisation of the pulse	*in*	body and music	*Functions to*	order music events temporally

(Ansdell, 1995)

Rhythm	>>=======➢ (facilitates)	Melody (singing)	>>=======➢ (facilitates)	speech

(Nordoff and Robbins, 1985)

Rhythm (felt internally)	>>=======➢	Synchronised with movement	>>=======➢	Vocal sounds

(Aldridge, 1996 and Loewy, 2004)

Here the suggested flow, within a music therapy process towards vocal and speech sounds, puts pulse acquisition, internally 'felt' at the start of these experiences.

On comparing qualities of musical elements in improvisational events, Wigram (1996) views the element of rhythm, and its tempo, for it's more 'primitively exciting' aspects, contrasting melody and harmony with their aesthetic qualities. In improvisations, Wigram additionally proposes a functional rationale for separating out the basic element of rhythm. He writes,

> if the improviser takes away some of the elements, reducing the number that can be employed, frequently the result is to enhance the communicative potential. For example, given a drum or tambour, two individuals, or a group, can play around with rhythms, tempo, meter and accents and put aside harmony and melody. …[this] can be a more exciting and communicative medium of expression than when potentially more

> complex and expressive instruments … are the tools of the experience (Wigram, 1996, p. 36).

Nordoff and Robbins (1985), while not comparing elements of music, also support the idea that rhythm, through drumming, can facilitate quality communication within an improvisation.

Despite warnings that fragmenting music into components is reductionist, music has so far been viewed composed of a 'web' woven from elemental sounds, with rhythm considered the most fundamental of these with pulse playing a vital part. Consequently rhythm is also fundamental to the MT process and as such its importance and particular attributes will now be explored further.

Unique attributes of rhythm – pulse focus

In this section the unique qualities or attributes of rhythm will be introduced, with the third section of this literature review providing a more detailed look at their applied use within studies and research.

It might be useful to revisit the introductory brief description from Parncutt (in Aldridge, 1999) of rhythm as musical events around a temporally 'expected' pulse. There are many concepts of temporally ordered rhythm throughout literature. Gaston (1968) suggests it can be a broader concept than pulsed rhythm, being at its simplest level a sequence of sounds and no sounds. In this inquiry we are considering the temporal order of rhythm that is governed by a pulse where time is equally divided by a regular single vibration or wave. While agreeing with Gaston (1968) that rhythm functions to order musical events through time, Ansdell (1995) further considers that, in both music and in the body, it is the organisation of the pulse that comes first making this temporal order possible.

The definition of a pulse in the introduction to this study suggests it sets up expectancies at regular intervals in time i.e. temporal order. An applied example of this aspect of a pulse is given by Nordoff and Robbins (1985). They report on a child bothered by musical rests until understanding that the wonderful thing about the basic pulse in music is that it comes at regular intervals whether there is music or silence. Nordoff and Robbins

reported that this knowledge enabled the child to feel confident and secure in this foundation of the pulse arriving at expected intervals in time and space.

Authors, Gaston (1968) and Wigram (2004) note that a regular, expected, predictable pulse is a feature of music in prenatal and infant life and that it is chosen by teenagers who generally prefer heavily pulsed music. They seem to be suggesting here that teenagers seek out the security a pulse provides. The sense of stability in music making is seriously threatened Wigram (2004) suggests, if playing is "so random, uncoordinated or vague that there is a significant absence of pulse" (Wigram, 2004, p. 56).

The intentional actions in movement to a regular pulse in time consequently allows the irregular or variation to be easily noticed (Aldridge, 1996). Wigram (2004) suggests basic variations to the pulse are by moving it about, tempo change, or rejecting it altogether. Changes can also be made to the pulse by the use of certain sound elements previously noted by Bunt (1994), such as timbre, dynamics, stress and pitch.

Visual representation of changes to a pulse by sound aspects (Bunt, 1994) and Aldridge (1996)	
Speed:	I I I I IIIIIIIIII
Timbre:	I I I I * * * * (* = different sound colour)
Stress:	I I Y I I Y
Pitch:	I – I _ I -
Duration:	_ _ _ _ · · · ·

(Judy Cooper)

Variation of the pulse can start to provide for simple repetition and imitation.

Alvin (1978), from her music therapy work with children who have autism, suggests that it is the temporal and repetitive elements of music that appeal to the child. These repetitive aspects are a natural part of play she claims, but they need to be part of a larger structure in order for it not to become obsessive and stereotyped. Here, for example, she might be referring to stereotyped tapped/flapped rhythms that are repeated or imitated and become part of free play or improvisations with the music therapist. Repetition of recognisable rhythms, as referred to above, is imitation or sometimes referred to as mimetic experiences mirrored or repeated back in interchanges. It is these repetitive and imitative processes that are considered by many authors as vital to learning (Stern, 1977; Sacks, 1998; Wigram, 2004).

Connectedness of two or more people through rhythm (pulse) is what Gaston (1968) refers to as a 'common bond' where words are not needed. The pulse of a rowing team for example is crucial and when synchronised has a singular ease of fluidity. A musical example of extreme connectedness through a pulse would be the orchestra where large numbers can play together and no words are needed. Importantly this connectedness, through a rhythmic pulse, provides what Gaston (1968) refers to as a 'unity of purpose' for movement such as in dance, work, play and celebrating together. He goes further to suggest that this togetherness or connectedness typifies that part of man that is healthy and challenging for those who are ill. Similarly Ansdell considered, "the complex synchronicity of music is one of its unique qualities…there is the possibility of acting, thinking, and feeling as one" (1995, p. 11). Lutz Neugebauer (cited in Ansdell, 1995) studied two people improvising and concluded, " at the points of shared musical significance there was a greater isomorphism between their physical processes. The depth of synchrony in musical communication is obviously deeper than we may imagine" (cited in Ansdell, 1995, p. 11-12).

Connecting with the pulse and synchronisation of rhythm to movement has been studied for almost a hundred years according to Thaut, Kenyan, Schauer and McIntosh (1999). They suggest the sensory mode is primarily an auditory one where a pulse from outside the body, being temporally ordered in space, is registered and responded to by a person. This view is perhaps divergent from feeling the pulse from within suggested by Ansdell (1995).

Sacks (1998) quoted Nietzche claiming the dynamic powers of music, to activate and regulate movement, to energise and drive, were due to its rhythmic force that he saw as the most primitive and powerful quality. This quality is considered not only about a forward motion in time, but how it links to "inner force and energy, of intention and impulse" (Sacks, 1998, p. 8). The notion of the rhythm of music being an 'energiser', was also claimed by Gaston (1968). Some authors take this idea further, placing this rhythmic impulse, that makes one feel like moving and/or dancing to be absolutely basic and fundamental to music. For example Dalcroze (1967) and Gaston (1968) hold that music is synonymous with movement and dance.

In summary, the pulse with its regular temporal order provides a sense of security. Out of this temporal regularity, the irregular can be easily observed, varied, repeated and imitated for learning, connecting and communicating. It has been suggested that the anticipatory quality of a pulse facilitates movement, energises and provides a forward rhythmic force or fluidity. The pulse provides order for behaviour to be observed 'moment by moment' in a musical event or experience. What then does rhythm add to these unique attributes of the pulse? If pulse is intrinsically part of rhythm where is the interface between these two? The following section on rhythm and its unique attributes will investigate these questions.

Unique attributes of rhythm

Having investigated the unique qualities of 'pulse' we now consider 'rhythm' and its special attributes that might be particularly relevant to music therapists and their clients.

" Rhythm is not just pulse but an organisation of events against a pulse" (Ansdell, 1995, p. 9). Here he suggests that against this regular occurrence in time, pulse, there can be separately woven patterns or rhythms of sound. Gaston (1968) explained rhythm in similar terms to those presented by Ansdell (1995) but used the word 'around', rather than 'against' a pulse. Whichever word is used, Gaston and later Ansdell imply two voices/lines become involved, one that carries the pulse and the other weaves the rhythm as an individual voice/line while still continuing to be part of or attached to the pulse. A type of symbiotic relationship has formed between connectedness and individuality. Gaston (1968) and Ansdell (1995) suggest that the connectedness by pulse, precedes, provides for and remains with the individual voice while rhythm weaves patterns.

A visual representation of Ansdell's view of rhythm and pulse is explored.	
1) I I I I I	(pulse)
2) I I I I I I	(doubles speed – continues as a pulse with no pattern recognition possible)
3) Y I I Y I I	(adds accent every third pulse - this continues to have 6 pulses and/or now importantly an evolution has occurred with two slower pulses on the accented notes, with a *rhythmic pattern* of three sounds per pulse. [known to musicians as 6/8 - compound duple]. The rhythm is now divided *within* the two pulses
4) Y....Y... Y I I Y I I	(rhythm is temporally linked to the pulse. The top voice has now stretched *over* the pulse in a sustaining manner without the pulse being sounded)
5) Y.....Y..... Y I I I I I Y I I I I I	(by accenting every sixth pulse, the rhythm has been stretched further over the second pulse of 3) – a temporal duration variation where the pulse still regularly occurs but is not sounded)

Judy Cooper

If the inner pulse can be established and 'felt', the early fundamentals of rhythm are intrinsically so too (Ansdell, 1995). As mentioned in the previous section on pulse, there can be expression by the individual using the pulse, but it appears limited to being tied temporally to that pulse with it's variations. What essentially allows for a separate voice, is the temporal connection to the pulse while simultaneously weaving around or against it. The visual representation above explains Ansdell's (1995) point. Immediately, the third visual allows for recognition and consequently repetition. It is in 4) however that the voice of the individual emerges while being linked to the pulse.

Out of this rhythmic voice, Aldridge (1996) observes, individuality can be explored. Rhythm, he suggests, forms a non-verbal language for this exploration (Aldridge, 1996). The enormity of this exploration, of individuality through rhythm, is noted by Wigram (2004). He considers creating around a pulse provides endless possibilities.

From the secure connection that the pulse provides, sound variations, rhythms or what Ansdell (1995) refers to as 'organisation of events' can be developed. Sound can be stretched over pulses or divided within a pulse forming a more individual, independent musical line or voice.

It appears that by stretching the sound over the pulse, the importance of having an individual voice has been accentuated. In music it is through singing or sustaining, in grief through wailing, in pain through crying, in happiness through laughter and through communication through articulated sound with stretched out vowels. Examples of this might be 'yum', 'wow' or 'um'. These all bring in the individual, expressive voice having its fundamental roots in rhythm. Aldridge (1996) asserts that " it is rhythm that provides the ground of being, and rhythm of which being is generally unaware. Rhythm is the matrix of identity" (Aldridge, 1996, p. 29).

Through movement, rhythmic expression can be shown by fluidly stretching over pulses or by subdividing movement within a pulse. As Dalcroze (1967) suggested, movement is rhythm shown or made observable by actions. The integration of rhythmic movement and music is noted by Loewy (2004) for its qualities that affect the vocal and motor systems needed for speech, appearing to encourage intent to communicate.

In this first section we have viewed pulse and rhythm for its unique qualities within music as a whole, their temporal organisational and anticipatory qualities and explored rhythm as an individual voice. It is suggested that these features of pulse and rhythm provide for connectedness and communication in which variations can be explored that lead to understandings about the Self and the world around. Rhythm and its pulse mean little if it cannot be 'felt' and Dalcroze (1967) suggests the training of the whole body is necessary to create a rhythmic feeling, combining the muscular and nervous systems, differentiating it from a machine. How we acquire and use this 'rhythmic feel' will now be investigated in section two of this review.

2.2 Developmental aspects of rhythm

Rhythm appears important in many aspects of young children's ordinary development. For example an infant may recognise the rhythmic pattern of their mother's communication long before they understand words (Aldridge, 1991; Erkilla, 2003). Repeated patterns of movement, such as arm flapping, bottom banging or engaging in

tickling games, can be understood as rhythmic shapes or pre-rhythmic expression. As language develops infants imitate and repeat strings of single syllables together 'dadadada' in a distinctly rhythmical fashion.

Sometimes the ordinary development of a person becomes disrupted by special needs. It is vital that what occurs in the natural development of infants is understood by music therapists, for appropriate planning when working with people with special challenges. Developmental learning, with people having such challenges, may follow the flow of natural developmental progress generally but with delays, or may occur inconsistently across areas of functioning.

In the following section the question of how and when rhythm might be acquired will be examined initially. Secondly, ordinary developmental progression will be discussed, focusing on the organisational aspect rhythm plays in this process, with the third section focusing more specifically on speech and language.

Acquisition of rhythm

A commonly asked question is how does a person acquire a sense of rhythm or rhythmic order? Research is divided and unsure about the answer to this. Stern (1977), a pioneer in developmental understandings, suggests that there is an innate ability to 'dance' as if there is a rhythmic source in the body or brain. This is an interesting concept that has not, to this researcher's knowledge, been validated or refuted. In particular the social cues, principally based on the temporal aspect of rhythm, would be affected should a disorder in Stern's suggested 'rhythmic source' occur. Stern proposes that without this 'rhythmic source' a person "could only react to – follow or lead the caregiver but never dance with her ….the ability to estimate and anticipate, intervals or time clearly relates to and even determines the various kinds of interactive processes that are possible" (Stern, 1977, p. 92). Rhythm and pulse develops as part of a process, according to Stern, that puts 'timing' abilities at the start of the flow. The developmental process, of acquiring temporal patterning, the meanings of different changes and variations in tempo and rhythm occur naturally, writes Stern. Acquisition occurs within the 'parent-infant exchanges' (Stern, 1977). These exchanges are understood to be referring to early communication within the first relationship a baby makes, usually between the child and birth mother. Rhythmic

shapes are gradually recognised and varied by the baby and mother over numerous exchanges, both adjusting and adapting their timing in a flexible manner.

Dalcroze (1967) observes that, "A child's body possesses instinctively the essential element of rhythm which is a sense of time" (Dalcroze, 1967, p.38). He cites the heart-beat as an unconscious activity, and not particularly useful from the point of functional perception and performance of rhythm. Breathing is similarly a regular divider and controlled to some degree, but it is the regular gait of walking that provides the "natural starting-point in the child's initiation into rhythm" (Dalcroze, 1967, p 38).

'Free play' in infants, consists of gestures and motoric movements that are uninterrupted as opposed to exercises aiming at their automatisation. Here, Dalcroze and Stern are in agreement. The process of 'free play' and 'parent-infant' interchanges both have a natural flow within which, they suggest, learning or developmental progress naturally occurs. This natural flow is based on the temporal organisation aspect of rhythm and the timing within these interchanges.

Music Therapist, Gertrude Orff (1984) suggests that although in the child's first year they cannot necessarily reproduce a regular rhythm, there is a long period of pre-rhythmic expression. The first signs of reproduction of a pulse normally appear in the second year of an infant's life (Orff, G., 1984), while the stabilisation of this ability to synchronise and also sustain a pulse, is shown to be at the later age of eight to nine years, in research by Malbran (2001).

Aldridge (1991) brings the various threads together concerning rhythm and a person's development, "rhythm is fundamental to the organisation and co-ordination of internal processes, and externally between people (Aldridge, 1991, p.195).

The role of rhythm in the process of intra and inter-relating will be examined in the following section.

Function of rhythm in development and learning of a person

Stern (1977) emphasises the importance of the regularity of interaction "to permit the possibility of forming expectancies" (p 92). Initially the infant learns to trust the expected. Once this trust is established, through the regularity of rhythmic exchanges between the infant and mother, small variations can be introduced. Stern (1977) considers

these variations as a consequence of and essential to engagement, but also importantly in maintenance of the infant's evaluative processes.

Seeking and recognising patterns by an infant occurs following a period of time when the parent connects to the child through a monologue, according to Stern (1977). Within this monologue, the parent uses adult length pauses, plus it has been shown, an inserted wait where the child's response, of a shorter duration, might be inserted. After a while, the baby begins to join in the conversation forming a regular, rhythmic exchange or pattern between the two parties.

In a series of social interactive processes, the ability to estimate and anticipate intervals of time in a rhythmic pattern would logically be responsible for the smooth flow "to and from one pattern of interaction to the other, so that the interactive stream continues uninterrupted" (Stern, 1977, p. 92). There is a need, Stern argues, for more extensive knowledge about the infant's timing abilities that allow this interactive participation, in what is commonly recognised as an intricate process. These transitional processes, according to Stern (1977), are based on the ability to estimate and anticipate intervals of time in a rhythmic pattern.

If the rhythmic interaction is inconsistent or cannot be established, progress through the developmental process, whichever theory one aligns with, becomes difficult (Beebe, cited in Robarts, 1996). Engagement and Attending are words often used and considered the first step towards learning and developing. Other words that might also represent this are 'connecting' and/or 'being with' another person other than the Self moment to moment. Connecting with another therefore presumes an understanding of Self as opposed to other and importantly being able to establish temporal order. Connecting with others and maintaining this is considered difficult for people who have autism (Wing, 1976).

Rhythmic qualities pertaining to speech and language acquisition

There is a large amount written in the literature comparing language and music with their overlapping processes. Rationale and relevance for investigating this concept is that neither participant in this inquiry has fluent speech. As rhythm is often cited as a commonality between music and language and it was the unusual rhythmic beating by participants that initiated this study, rhythm and its links to speech and language may be

worth investigating further through literature. Developmental aspects of speech and language acquisition will be investigated followed by differences and commonalties between music and language.

There are developmental stages for speech and language acquisition that are widely accepted in the literature (van Riper & Emerick, 1984). These stages provide an overall pattern for all children's typical speech and language development, being slower for those with delays to this area of functioning. Due to the limits of this inquiry, a brief working outline is given of these stages of speech and language acquisitioning in the appendix B. Following each stage outline the applicable rhythmic aspects within the process, as derived/translated by the researcher, are placed in brackets.

As the child grows, develops and learns, expressive speech matches functional speech processes (Wortham, 2002). This is shown, Wortham suggests, by the way a child uses language in a negative phase. For example 'no' can be very expressively used. Additionally speech acquisition has now assisted the child to move developmentally from solitary, parallel play to reciprocal play. Ways of playing and consequently learning have also expanded, through a "growing mastery of symbolism" (Coulson, 2003, p. 22), from using concrete concepts to imaginary concepts At three years of age conversational rules, such as turn-taking, are practised and understood (Wortham, 2002). Such development rely on rhythms of reciprocal play and communication occurring naturally. These social interactions are difficult for people who have autism.

Music and language are frequently compared for their commonality where production of both requires well-organised cognitive functioning. Differences, between music and language, are also acknowledged (Besson and Schon, 2001). For commonalties they cite Arom's basic structural criteria for defining music as rhythm and pitch, suggesting these two can also apply to language. Both are "sequential events that unfold in time with specific rhythm and specific segmental information" (Besson & Schon, cited in Peretz, 2001). Their research suggests that similar areas of the brain are activated for temporal changes to the expected, both in language and music processing. This indicates processing of temporal information relies on cognitive abilities, in language and music.

Production of language (speech), as opposed to processing (receptive and/or perceptual) is particularly relevant to this inquiry. When examining the therapeutic value of

music for speech, it is often noted that singing is the preferred modality that often precedes functional speech recovery (Cohen, 1994; Nordoff and Robbins, 1984). "Every song contains an inherent rhythmic structure" suggests Cohen (1994, p 8) who hypothesises rhythm may be easier to imitate and maintain within music, than in the rhythm of speech.

In 1995, Cohen and Ford engaged in collaborative research into the benefits of musical cueing for people with aphasia. Some participants were in fact found to have apraxia, making their speech production limited and were unable to hum or sing. Producing connecting words for song lyrics is extremely difficult for people with apraxia and she concluded that "the task may have been so challenging that the addition of rhythm and/or melody proved to be distracting rather than beneficial" (Cohen & Ford, 1995, p 54). They recommended that the research be repeated, excluding participants with Apraxia. From a table of articles containing therapeutic accounts of singing with speech-disordered clients, 1953- 1993, only one paper of twenty three considering this method was working with children who have apraxia (Cohen, 1994, p 13).

Loewy (2004), a strong advocate of rhythmic work in music therapy, writes, "Rhythmic movement and music are part of a collaborative system that affects vocal/motoric apparatus which enhances communicative intent" (Loewy, 2004, p.5). Other tenets noted by Loewy were that speech and movement tend to develop synchronously, and that music self-actualisation is enhanced by the person hearing his/her name within the rhythm.

Aldridge (1996) concurs with Loewy but emphasises rhythmic order, " there is a self-synchronous organisation to speech and movement which is essentially rhythmic. Rhythm provides the means by which behaviour is organised" (p. 53). Communication develops, using any language form, by the rhythms initially synchronised within the person, followed by the listener synchronising with the emergent rhythmic structure of the speaker/singer/player (Aldridge, 1996). As such, what flows through and between those in communication has a similar order with no 'between' in the continuum of order (Condon in Aldridge, 1996). It is this 'between' in the continuum of temporal order that will form part of this investigation, with the research Participant's help. The temporal aspect of rhythm and vocal synchronising is noted by Loewy citing Austin, " Breathing together begins the process of vocal attunement (cited in Loewy, 2004, p.17).

Thus far the review has noted rhythm as a component of music with its particular attributes and function in developmental learning, both generically and specifically in speech and language. Finally, Bunt (1994) reminds us that it is not sufficient to study the elements of music in isolation, "Each element, even if we can regard it as a self-sufficient idea, is bound additionally by context, learning, behavioural state and cultural conditioning" (Bunt, 1994 p.46). Here he suggests, the music production and/or listening is bound by the individual personalities of those involved in the experience and what they bring to this communication in addition to, and alongside those intrinsically unique aspects of the music.

2.3 Application of rhythm in music therapy

The previous sections presented rhythm as an element within music, its unique qualities in ourselves and the role it plays in the development of a person including the early stages of communication, specifically in speech. Aspects of rhythm considered to date are its ability to; organise temporally, both internally and to the external world and as such its place in understanding the Self from others; its vital place in synchronicity between people for communication; unique anticipatory qualities; an ability to energise and its consequent facilitation of movement (motor activity). It could therefore be deduced that rhythm plays a vital role in life itself.

How then are these special attributes of rhythm considered within MT practice? This inquiry has four aspects that need considering, however in the literature they are not discussed together. These aspects are rhythm and its organisational qualities, autism, apraxia and music therapy. The section begins by viewing rhythm's qualities within the MT process. A wider view of rhythm's role in MT follows including case studies where rhythm has been indicated as contributing to change for the client. Finally this section details MT with people who have autism and apraxia.

Rhythm within MT process

The principles of music therapy were investigated by Gaston (1968). He found remarkable agreement, amongst music therapists and allied professionals, on three main principles. These are;

- The establishment or reestablishment of interpersonal relationships.

- The bringing about of self-esteem through self-actualisation
- The utilisation of the unique potential of rhythm to energise and bring order. (Gaston 1968, p [v]).

This section looks at rhythm within MT and therefore it is important first to understand MT's multi-faceted nature. In a recent university lecture, presented by music therapists Daphne Rickson and Sarah Hoskyns, some of these multi-faceted aspects were succinctly noted. They included, "the use of live music, a mutual trusting relationship between the client and therapist, discovering the clinical needs of the client and promoting change or bringing relief to the condition of the client, within the context of a multi-disciplinary healthcare team" (Hoskyns, 2006). An important yet basic tenet of MT is that its aims are rarely of a musical nature even though the methods and techniques involved are musical (Davis, Gfeller & Thaut, 1999).

Alvin (1978) suggests music is appealing to children for its temporal and repetitive aspects, experiences the MT process can provide. However she suggests this process does make cognitive demands. The thoughts of a person, she reports, turn into actions that in turn lead to certain behaviours. Musical understandings cannot proceed without reasonably complex cognitive processes being involved (Alvin, 1978). Because of the temporal nature of music and in particular rhythm, these thoughts as actions (motor-neurone processes) and behaviour in time can be easily observed. Alvin (1978) explains these musical understandings may stay at the same level as the understanding of the organisation of spoken language.

The temporal nature of rhythm makes assessment through MT possible (Alvin, 1978) because it allows people's behaviour to be observed in time and space. It is considered that, "music therapy assessment has an important and unique contribution to make to the diagnosis, assessment and treatment of physical, psychological and emotional illnesses, handicaps and disturbances" (Wigram, Pedersen & Bonde, 2002, p 257).

One of the more detailed reports from literature on rhythm in practice is of 'rhythmic responses' in MT by Nordoff and Robbins (1985). They made insightful comments on rhythm within their MT work in an educational setting with children aged from four to seventeen years of age, many with severe health challenges. This inquiry appears particularly relevant to this study. Children they were working with had a variety

of challenges including autism and those with neurological disorders. Although there are some commonalties between rhythmic responses with people with the same disorder, the 'musical self-portrait' that clients present is unique and responses are never the same or predictable (Nordoff and Robbins, 1985).

They categorised responses based on MT work with 145 children, 31 of whom received between three to ten sessions while 40 received extensive experiences of up to three times a week for between six weeks to 13 months. The average session length was 15 minutes. Four of 13 categories of rhythmic responses are quoted here rather than in the Appendices due to their considered importance in the inquiry and all are from Nordoff and Robbins (1985, p. 63).

1) 'Unstable rhythmic freedom', from a neurological source (2:b) where; "there is considered rhythmic freedom and perception of music but the response is marred or limited by the child losing self-control through an excessive reaction to the stimulus of the music…this is something that happens' to him and not something that he does out of choice. The primary cause of this aberration appears to be organic".

2) 'Evasive beating' (6) where; "the child avoids beating in time to the music. He may cease to beat when the tempo of the improvisation is made to coincide with his, or may change the tempo himself to side-step collaboration. He may beat strongly to drown out the improvisation. This can be due to the child's fear of the experience - he is shocked by the sensation of the basic beat uniting with his own beating impulses".

3) 'Chaotic-Creative beating' (8); "an unformed beating that is hyper-creative and insufficiently stable. It is related to the improvisation but subtly and unpredictably so. It may be impulsively playful…he is not beating compulsively…neither is it disordered for, although it may be unregulated, it has a fragmentary and evanescent relationship to the music".

4) 'Tonal and Rhythmic Responses' by children without speech (10 c.) where; "tonal, rhythmic, or exclamatory sounds are made by children with severe or total speech handicaps. This response frequently occurs to improvised music which the therapist finds to be emotionally significant for the child. The involvement in the experience activates the inherent urge for vocal expression; the music's melodic and /or rhythmic

structure both evoke the form of the vocalisation and support it" (Nordoff and Robbins, 1985, p 63).

Research Participant J showed elements in his beating of responses outlined in 1), 2) and 4) above and Participant K similar rhythmic responses to those described in 2), 3) and 4).

Four further aspects of rhythmic responses were noted by Nordoff and Robbins; rhythm as security, its temporal nature, assessment qualities of rhythm and seeking melody through rhythm. The first three have been discussed. The fourth aspect 'seeking melody through rhythm' (Nordoff and Robbins, 1985, p. 31) revealed two processes of music therapy with possible relevance to this study. They heard 'compulsive beating' in a young, non-verbal, hyperactive girl who was unaware of an external pulse initially. After the music therapist broke across this 'compulsive beating' with cross rhythms, she was able to synchronise with the group's improvising pulse. At this time she started to speak initially with rhythmical sounds or vowels, that evolved into singing. Retrospectively Nordoff and Robbins considered she was seeking melody and came to this through the previously mentioned 'gateway' of rhythm. From this first example the flow of MT might look like the following:

- an internal beat established
- synchronising with an external pulse (reliant awareness of others/aural perception/ attending)
- rhythmic vocalising
- speaking
- melody seeking and production

A second case study from Nordoff and Robbins (1985) shows a flow within MT process where rhythm is used as security for a boy considered too frightened to beat the drum (previously used case study on security). He was motivated to join the group's musical pulse and was startled by playing alone in the rests. He found confidence through the reliability of the pulse. The flow within this MT process of the second example is as follows:

- non-participation
- motivation and awareness
- beating of an individual nature – unaware of a group beat
- synchronising with an external beat
- rhythmical freedom and confidence for self-expression within a relationship

In summary, some principles of MT have been examined and the multi-facets of MT noted. Topics discussed included the type of goals used in MT, musical understandings being dependent on cognitive processes and the temporal aspect of music, making MT a good assessment intervention. Nordoff and Robbins (1985) categories of rhythmic responses and their examples of the flow within MT's process were investigated. Their comprehensive work on rhythmic responses covers a range of responses in detail. What Nordoff and Robbins emphasise is the unique and individual nature of the exploration of people with particular needs and that no two MT processes will therefore be the same.

General literature on the unique qualities of rhythm in application

This section aims to view more widely the literature on how music therapy uses the unique qualities of rhythm. Material is considered from the aspects of; chaotic rhythm in MT and 'containment'; developing intra-rhythmically in readiness for inter-relating musically; the role of rhythm in improvisation; temporal structure of rhythm and its anticipatory aspect; movement to or as rhythm.

The role of music in therapy as the 'container' for chaotic behaviour, to restore order for communication to be established through the temporal nature of rhythm, was noted by music therapists, Nordoff and Robbins (1985), Wigram (2002) and Erkilla (2004). Ways of working, when rhythmic responses demonstrate 'chaotic-creative beating', are discussed by Nordoff and Robbins;

The therapist does not try to impose musical order for this would inhibit the child's inherent creativeness. The responsive work of the therapist tries to precipitate moments of musical perception that lead the child to relate his beating to the improvisation. At first, these fleeting responses consist of only one or two musically related beats, but they form the basis for therapeutic work that gradually secures the child's confidence in himself. He feels himself within the music and in beating can exteriorise his experience (Nordoff and Robbins, 1985, p. 72).

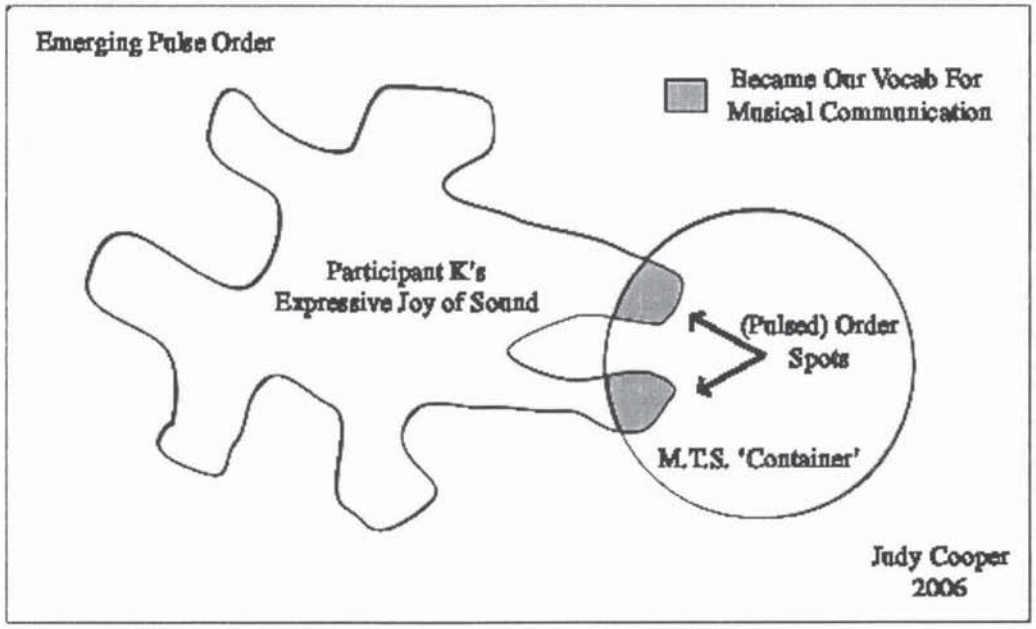

Figure 1 Emerging Pulse Order

A visual representation of the emerging pulse when working interactively in MT.

Erkilla (2004), in his paper on the relationship between music and language and MT and psychotherapy, agrees with Nordoff and Robbins noting that in therapy, if the music and particularly the rhythm is chaotic, the therapist acts as a container for these. Gradually, Erkilla suggests, the therapist can project or facilitate some form of order enabling communication to emerge. Orff (1984) believes chaos is at the opposite end of the gestalt continuum, where gestalt is "form that is both tangible and intelligible. An organised whole in which each part affects every other, the whole being more than its parts" (Orff, 1984, p. 30). When working in MT with rhythmic chaos and the building towards gestalt, Orff highlights the dilemma of the music therapist, when to use structured or unstructured

activities. She considers the sensitive, experienced therapist will err towards the unstructured and non-interfering approach while being attentive to the client's needs.

The pre-rhythmic style of playing music is viewed by Orff (1984) as a free rhythmic flow with no order, structure or pulse which is not however stereotypical playing. She considers the first recognisable rhythms are; 'quick, quick, long' or 'long, long. quick, quick, long' that appears as secondary imitation. By that she refers to a rhythmic figure that has been heard repeatedly and suddenly re-emerges as if new, similar to that experienced in the normal development of speech and language in young children. Alvin (1978) highlights the same rhythmic figure 'quick, quick, long' that she believes is the basic and most used natural rhythmic pattern.

Bunt (1994) explored the potential healing qualities of the emerging rhythmic patterns as a person develops. He asserts that a person's temporal framework is of vital importance when working with someone. Temporal separation of sounds, or periodic gap, in a rhythmic pattern has been the focus of much research. It has been found that a gap longer than two seconds, limits the perception that two events belong to the same present (Bunt, 1994). This temporal signal between sounds is part of the crucial 'anticipation' aspect when synchronising sound and movement. Bunt called for a more systematic study of rhythm and temporal skills in MT.

The MT relationship is thought to mirror the primary relationship, between Mother and child, in which communication evolves (Aldridge,1996). Aldridge is more specific suggesting "Arousal, affect and attention are learned within the rhythm of a relationship" (Aldridge, 1996, p. 249). Communication is dependent upon motor co-ordination and responses where " the 'doing' and co-ordinating with another, is primary" (Aldridge, 1996, p. 249). This he believes is important and where non-verbal therapies, such as music, are invaluable before more complexities of lexical meaning are necessary (Aldridge, 1996). Erkilla (2004) believes that sound improvisation is an important early developmental stage as communication emerges. He supports Eva Basch-Kahre's (1985) developmental stages as his concept base; chaotic to emotional, sensorimotor to operational thinking.

Wigram issues a cautionary note on how a consistent pulse and tempi are used in improvisation because "the driving force of a stable pulse can also prevent the improviser

from stopping to think, pausing, slowing down or speeding up, and allowing there to be flexibility in the music" (Wigram, 1996, p. 56).

In summary an introduction to MT, its principles, goals and multi-faceted nature and a study of rhythmic responses within MT have been examined.

MT case studies - rhythmic focus

The table of case studies below, in which rhythm features prominently in the MT process, is not meant as a comprehensive list but an indication of how the element of rhythm has been employed by a variety of music therapists over the last forty years. The disorders or challenges of the people in these case studies do not match exactly those of the participants in this inquiry, but serve as a viewing platform for commonalties or differences in processes of MT and the client's responses to these.

Table 1 Case Studies

Name	Client	Technique	Function	Outcome
Ansdell, (1995, p. 78)	Adult with severe neurological damage - no conscious speech but spoke normally when sleeping.	Instrumental rhythm alongside singing-motor action allowed the voice – client driven – different contexts; Call and response vocal range extension by glissandos between notes; Sing without playing Song writing	Self motivated and directed; (Non-participation if tempo not manageable).	Simple pulsed beat (maybe first of the bar) in single tempo with vocalisations – (More emotionally stable) Greater flow musically; Greater tempo change tolerance; Musical communication in what became his primary therapy.
Oldfield, in Bruscia (1991, p. 164)	Language disorder – (never babbled as a baby)	Vocal exchanges of a rhythmic nature. Experimented with different vocal noises.	Motivating communication/ verbal or non-verbal	'in control'; expressive facial 'funny' faces, vocal communication-sung dialogues eventually.

Name	Client	Technique	Function	Outcome
Boswell and Vidret, (1993, p. 39)	Severe and profound orthopaedic and /or intellectual impairments – significant language dysfunction and delays in motor development	linking rhythmic movement, music and speech Phases MT; -focus attention -passive movements -imitative movements -original movement responses	-improving psychomotor performance -improve rhythmic skills-encourage speech sounds	Produced speech sounds not previously heard; Deepened bodily experiences; increased communication potential
Nordoff & Robbins (1985, p. 72)	Nine year old Mongoloid boy (now named Down's syndrome) Rhythmic response is chaotic-creative beating	Synchronising with the fragments that are 'with' the beat within a improvisation	Confidence of being "within the music" – feeling the pulse and music from within – is ordered and what N& R called "musical intelligence is realised"	Connecting internal with external pulses as a basis of order Allows for further work to progress

Name	Client	Technique	Function	Outcome
Nordoff & Robbins (1985, p. 64)	Seven year old with aphasia	Dramatic music used with unpredictable changes of mood For what N & R named 'unstable rhythmic freedom of the psychological type'	" engages her impulsiveness" responds with free singing showing a unique musical gift	Starting point for inducing a sequence of personality changes – ego or building of the Self took place
Jo Ann Euper (in Gaston 1968, p. 188)	Six year old with autism. Attending to task and multi-tasking of two activities such as listening and playing.	Rhythmic band – instrumental activities – patterning such as alternately clapping hand with self and with another – continuing to play as the music was playing and finally following tempo changes	Connecting to the environment - attending to task and organisation to play with another	MT aided the client's ability to "relate to himself in context" and purposeful responses improved.
Archer, C. (2005, video presentation)	Teenager with no speech due to trauma	Single note, rhythmic patterns synchronised with speech.	Secure way of communicating	Linked back to normal speaking

Name	Client	Technique	Function	Outcome
Bunt, L. (2003, p. 59)	Mild Cerebral Palsy, walked with irregular gait	Making music to find own tempo and steady pulse	Work from within to outside	Dev/ self organisation.
Bunt, L. (2003, P.62)	2 and ½ years old. Rett's Syndrome	Sound gestures, instrumental vocal sound	Rhythmic patterns and pre-pulse actions in preparation for interaction	Interaction

When analysing the above studies the author found the only music therapist who considered the process was around pre-pulse work was Bunt (2003). This was when he worked with a client with Rett's Syndrome, linking vocal sound and gestures (movement) with rhythmic patterns using an instrumental method.

Two studies by Nordoff and Robbins (1985) and Bunt (2003) showed the response of internal order or pulse-order from within in preparation or readiness for entrainment or synchronising with an outside pulse. Both these authors used an improvisational approach.

Music therapy where the pulse and rhythm were felt from within while the therapeutic process was about entraining or synchronising with the music felt externally was the focus of the study by Jo Ann Euper (1968). This study was using rhythmic band, or instrumental approaches that intrinsically uses rhythm and movement synchronously.

MT with people with various speech disorders was considered in five of the above case studies. All MT methods linked speech/singing and movement with rhythmic activities in an integrated fusion. One person with challenges to speaking, trauma induced, gradually used rhythmic single note piano playing linked to speech, to facilitate speech restoration (Archer, 2005). With a similar integrated approach, three studies involving people who have had neurological damage (genetically or induced) produced more vocalising or speech

sounds and one sang dialogue (Oldfield, 1991), Ansdell (1995) and Boswell et al, (1993). One therapy team, Nordoff and Robbins, using dramatic music, with someone who had aphasia with responses considered of the "unstable rhythmic freedom" type, the music appeared to release her voice for singing that was a starting point for "development of the Self" (Nordoff and Robbins, 1985, p. 64).

Consideration will now be given to the specific challenges that contribute to making the participants of this inquiry unique. The Participants will be introduced in the Method section. Background information about autism and verbal apraxia will now be presented, also examining music therapy with people with these diagnoses.

Autism

Background to autism

There is a substantial amount of writing concerning autism. However this description will be limited, serving purely to inform the reader as background to the later case study.

Autism is now widely considered a complex genetic neurobiological disorder (Baird, Cass & Slonims, 2003) with research continuing to show no consistent diagnostic markers. Baird (*et al.,* 2003) suggest that multiple causal genes are possibly involved. They cite several well accepted organic aetiologies, including prenatal complications, localised lesions and postnatal infections.

Due to a lack of identified specific causal genes for autism, it is behaviourally defined. This can produce a dilemma in achieving consistency as it relies solely on observational data collecting. Typically this might include a case history where the focus is on the developmental background, systematically looking at core behaviours and observation in a variety of settings. Guidelines for behavioural diagnosis of autism are outlined in manuals such as the DSM-1V-TR (2000). The criteria for establishing a diagnosis of autism have to be applied while recognising complex factors such as symptom variety from person to person and developmental change to these symptoms over time. The three areas of developmental delay or abnormal functioning needing to be present by the age of three for diagnosis are: qualitative impairments in social interaction, qualitative impairments in communication and restricted, repetitive and stereotyped patterns of

behaviours, interests and activities (DSM-1V-TR, 2000, p. 75: details in Appendix A). Autism is also thought of as a Pervasive Developmental Disorder (PDD).

Recently the prevalence of people with an autistic disorder has been established at about four in every 10, 000 children (Thaut, 1999). The number of children diagnosed as having Autistic Spectrum Disorders is considered to be increasing, although alterations to diagnostic methods are considered to be complicating statistics (Fombonne, cited in Baird, Cass and Slonims, 2003). Current statistics from within New Zealand from the National society for autism (www.autismnz.org.nz, 2006) estimates there are approximately 40,000 people with autistic spectrum disorders in a population of approximately four million. This figure includes people at the higher functioning end of the spectrum.

In summary, the essential features for a diagnosis of autism are described consistently through literature as;

- qualitative impairments in social interaction
- qualitative impairments in communication
- restricted, repetitive and stereotyped patterns of behaviours, interests and activities (DSM-1V-TR, 2000, p. 75)

Music therapy with people with Autism

"Music therapy is now recognised as an appropriate and efficient way to help children with autism develop their capacities for emotional communication and social interaction" (Aarons and Gitens, 1992, cited in Robarts, 1996, p. 134). This is supported by Warwick (1995) who argues for music therapy with people with autism, from the developmental perspective within education. Similarly Wigram (2004) provides further supports for the efficacy of MT with people with autism, particularly within the developmental curriculum. He claims that 'evidence' for efficacy of *any* therapeutic intervention is lacking and that no single therapy has helped everyone or led to improvements in all areas of functioning. What has been evaluated as helping is;

- early intervention
- the intensity and consistency of intervention

- acting on what the child does rather than on some interpretation of his/her behaviour
- providing structure and predictability
- imitating the child
- learning through imitating others
- providing rewards

(Wigram, 2004)

Although it appears there is little strong 'evidence' for the efficacy of MT with people with autism, there is strong anecdotal body of support from parents, carers and professionals in the field.

Various approaches to music therapy are used when working with people with autism. One common orientation however is Improvisational MT, which is employed by music therapists world-wide. (Nordoff and Robbins, 1977; Brown 1994; Bunt 1994; Warwick 1995; Wigram 1995). A more instructional or 'behavioural' music therapy approach is practised by others such as Thaut (1999).

Robarts (1996) suggests integrating clinical observations and research from Improvisational MT with findings from research in new infancy provides for further understandings of how children with autism, in musical interaction, "gain a self-awareness and relatedness to others that is cohesive rather than fragmented" (Robarts, 1996, p.136). This new awareness of cohesiveness writes Robarts, means the person with autism is more able to respond in social situations.

A succinct review and discussion of research in Improvisational MT, from various models (qualitative, quantitative, combined and new paradigm research models) is offered by Robarts, (1996, p.138). Of particular interest to this study are two quantitative studies (cited in Robarts, 1996) by Muller and Warwick, (1992) and Edgerton (1994). Their findings, from micro-analysis of mother-infant interactions, show the musical improvisory aspects and phrased structure of basic emotional communication, according to Robarts (1996). What was observed, within this communication between infant and mother/carer, was both partners adjusting their timing, their 'emotional form and energy of expression' to

bring about inter-synchrony, smooth transitions and complementary feelings (Trevarthen, 1993a, cited in Robarts, 1996, p. 140).

Here, the researchers could be writing a list of what is challenging for people with autism; synchrony within a partnership, flexibility and creative responses in a reciprocal manner (Robarts, 1996). This list, Robarts suggests could also be what MT process, particularly Improvisational MT, seeks to provide; synchrony within a musical and therapeutic relationship, flexibility and creative responses by communicative interchanges. It is suggested above that MT, and the processes within it, forms a model based on the processes within the mother-infant relationship. These same processes of learning and being are in the very areas of need within someone with autism.

'Innate musicality', being rhythmic and phrased activity, within the communicative interchanges between mother and child is provided for naturally by the organisation of processes in the brain (Robarts, 1996). Here the cerebral processes Robarts refers to include those responsible for perceptive, affective, motor and cognitive expression. Within the mother and infant interchanges, sounds in phrases and gestures can be recognised as rhythmic and shared (Robarts, 1996). Exchanging of their parts, in these mother and infant interchanges, occurs with split-seconding timing (Beebe, 1982, cited in Robarts, 1996). In MT, the sharing of these affective states or moods "can be powerfully realised" (Robarts, 1996, p.140) and realised as preceding development to what Robarts refers to as, 'higher relatedness' between mother and infant.

The flow chart below was developed to show visually how improvising, particularly within a trusting relationship where imitation and/or variation is recognised, can be a cyclic experience in which learning occurs.

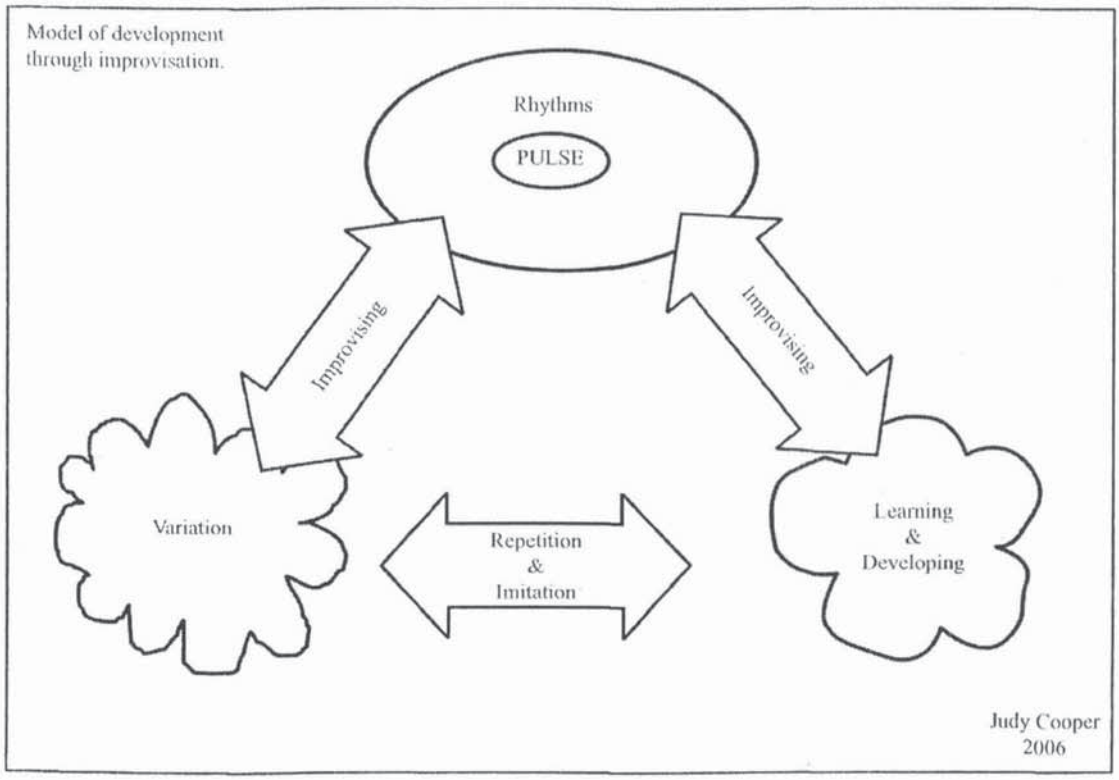

Figure 2 Development through Improvisation

Alvin (1978) refers to Lorna Wing's belief that learning for someone with autism is not assimilated through watching as another models behaviour, or by verbal instruction but by the autistic child feeling their own muscles. Movement requires systems of the body to work together. Those systems involved include proprioception (muscle awareness) of the nervous system to consciously move and feel, cognitive activity to learn and remember and psychological for the motivation to move (Alvin, 1978). The above mentioned systems are all fed messages from the senses of the body to allow " humans to interact with their environment in a meaningful way" (Copstead & Banasik, 2005, p.1150). People with autism have unusual responses to sensory stimuli and may be disturbed by modulation challenges from stimuli "such as touch, light, sound or pain" (Davis, Gfeller and Thaut, 1999, p.165). Music, Alvin claims (1978) is a good therapeutic medium to integrate the above systems.

This section of the review has focused on the process of MT within a relationship, working towards self actualisation using unique qualities of rhythm with people with

autism. These are the three principles of music therapy outlined at the beginning of this applied section by Gaston (1968). It has been suggested from the literature that "the 'music' inherent in all our human functioning can be traced to the rhythms and sympathetic responses of infants" (Robarts, 1996, p 136). These 'rhythms and sympathetic responses' are the core aspects of relating that people with autism find challenging.

Robarts (1996) writes,

> Music Therapy addresses the fundamentals of what it is to be a human being reacting to other human beings, and that it offers a context in which the motives of the self can be nurtured, and the emotions can be experienced, expressed and brought into play in communication. In work with autistic children, musical experiences can engender self-experiences and developments in emotional communication which, in many cases, are reported not only to carry out into everyday life, but to have a significant impact on the overall mental development of the child. (p 137).

Verbal Apraxia

Background to verbal apraxia

In the literature, the disorder's name is defined in different ways. Thaut (1999) suggests severe dyspraxia is called apraxia. "Apraxia of speech is characterised by impaired volitional production of articulation and prosody" (Cohen and Ford, 1995, p 46). Praxis comes from the Greek word meaning 'movement process' or 'practice' and is a skill that links the brain and behaviour (Davies, 1999). There are three stages to Praxis being; ideation, having an idea followed by knowing how to act on the idea, the motor planning involved and finally being able to carry out the actions or execute them. Apraxia occurs somewhere through this organisational process of "sensory information gathering and storing, ideation, motor planning and execution" (Davies, 1999, P. 9). There are multiple possibilities for this process to malfunction due to a vast numbers of sites and the process becomes additionally complex as the disorder may occur inconsistently. Apraxia is therefore a disorder of Praxis being a neurologically based disorder of motor function that can be developmental (from birth or infancy) or acquired (from brain damage). The cause

of Apraxia is not known despite a quantity of research. Apraxia in speech is less understood than aphasia (impaired ability to use or understand oral language).

Below is a brief summary of apraxia - from Davies (1999), unless noted otherwise.

Apraxia = Dyspraxia

Apraxia – a more severe form of dyspraxia (Thaut, 1999)

Disturbance in the sequence of spoken language

Praxis is a 3 stage process:

- Having an idea
- Knowing how to act on the idea (motor planning)
- Being able to carry out the plan in action

Apraxia occurs somewhere through this organisational process

There are multiple possibilities for this process to malfunction

The disorder may occur inconsistently

People with Apraxia have normal intelligence

A person with Apraxia often develops very strong body-language

Poor sequencing skills may affect the order of letters in words

- words in a sentence
- unreliable word-finding may occur

Speech may seem unclear

- may find imitating sounds difficult

Relating the sound with the letter symbol may be difficult

- the sound in a word can be challenging

Neurologically based disorder of motor function

Developmental (from birth or infancy) or acquired (from brain damage)

Davies (1999)

Music therapy with people with verbal apraxia

The literature on MT with people who have verbal apraxia appears very sparse. Material was therefore gathered regarding MT with people who have challenges to their speech and language. This was to further understand what MT methods and techniques of

working with Participant K might be beneficial. As the foci of these papers was diverse, they have been viewed independently rather than comparatively.

According to Davis (et al 1999), two contrasting styles of MT approaches are used when working with people with verbal apraxia. Firstly the approach that focuses on the reflexive-like speech (Melodic Intonation Therapy, [MIT] or stimulation approach) and secondly a more direct style of working on speech sounds such as its articulation and sequencing.

Speech is one of the first planned motor activities in normal development and the inability to speak can lead to the assumption that the intellect is also impaired. However this is a often a false assumption (Davies, 1999). "Poor sequencing skills may affect the order of letters in words or words in a sentence or unreliable word-finding may occur....speech may seem unclear...may find imitating sounds difficult" (Davies, 1999, p. 18). Other organisational challenges to the production of language might include relating the sound with the letter symbol or the sound in a word.

A paper by Cohen, (1994) describes similarities between music and speech, and gives a background to Melodic Intonation Therapy (MIT). A comprehensive table of articles (1953-1993) concerning the therapeutic application of MIT for singing in speech-disordered clients is offered, with the majority of clients having neurological impairments. Cohen's outline of MIT (Appendix C) is one option possible when working with people with Apraxia. MIT uses singing aimed at improving speech production by "embedding short phrases and sentences into simple, unfamiliar melodic patterns" (Cohen, 1994, p. 9). The most relevant study using MIT was by Krauss & Galloway (in Cohen, 1994) with two young children with language delay and apraxia. The children's language showed improvements in phrase length, verbal imitation skills and noun retrieval.

Cohen has also written about various aspects of speech and MT, with an early paper (1988) concerning a client who had right brain injury. Using both melody and rhythm to decrease speech rate gave an 11% decreased rate while rhythm alone gave a 28% decreased speech rate. Later research looked at musical cueing in MT with people who have aphasia (Cohen and Ford, 1995). Findings suggest purposive speech embedded into familiar melodies proved confusing to the research participants as the familiar lyrics were elicited by the melody. Cohen and Ford found that clients in this study included those who have

severe apraxia of speech. These clients produced the fewest words and "one was so severe.... he was unable to even hum a melody" (Cohen and Ford, 1995, p. 53).

Many authors however have compared language and music and found many overlaps in rhythmic aspects (Darrow, 1984; Benson & Schon, 2001; Port, 2003). In a paper on suprasegmental (prosody) qualities of speech perception and a comparative study of speech perception and rhythmic responsiveness between normal and hearing impaired children, Darrow (1984) holds that rhythm is the most important suprasegmental feature of speech with the periodic placement of silence and sound being a critical perceptual feature. There is a bulk of research into this aspect of speech that is beyond the scope of this inquiry. The primary perceptual aspects include the "rate, stress, breath-grouping and pauses" (Darrow, 1984, p.50). She highlights the importance of rhythm in speech suggesting appropriate therapy would often " emphasise rhythm initially and later stress articulation" (Darrow, 1984, p. 50).

An unpublished thesis by Elaine Streeter (1979) on the theoretical background to interpretations of rhythmic skills was unobtainable. It is well regarded in the MT profession. All efforts were made including a direct approach to the author, where she suggested it is kept at the Guildhall and its original University, York.

This section has viewed MT and its principles, rhythmic responses and the use of rhythm as providing the therapeutic tool for change in clients. The MT case study review demonstrated various ways rhythm's unique qualities became the focus in clinical work. Finally, MT when working with people who have autism and those with production of speech challenges was viewed.

Helping the MTS in this inquiry are two teenagers, one who has a diagnosis of autism and the other of verbal apraxia. Their willingness to be part of this inquiry and the course it took will now be viewed through their two case studies. These are based on clinical work with the MTS after gaining ethical approval.

3 Method

3.1 Setting and Participants

Setting

The research took place in a Secondary Educational setting at a Learning Support Unit. Young people, with a variety of challenges to their learning, come to this Unit daily. The Unit operates within the Secondary College providing learning support for young people from 13 to 22 years of age. The classes are arranged by the student's age. For some pupils this unit provides a base from where they join classes with peers outside the unit, while having selected subject learning within the unit. For other students, all their learning is provided within the unit.

The data for this study was collected at the end of the school year (2005). This was after the MT student had worked for seven months with the two clients, now the research Participants, as part of the post graduate studies in music therapy. As this inquiry is part of a long-term music therapy programme, its history will be detailed briefly.

The College and Learning Support Unit, noted above as the setting for this research, had no history of music therapy. Consequently the Music Therapy Student (MTS) set up physical resources and facilitated staff in theoretical understandings about music therapy within the unit. These procedures in setting up a MT programme involved finding a suitable space to work, instruments, resources, timetabling within existing schedules and consultancy work with teachers and teacher aides. Meeting with parents of prospective clients and other professionals working with the young people in the unit were also part of the setting-up procedures. Referrals were given to the MTS through consultancy meetings with the home-based teachers and verified by the Unit leader.

The two young students were invited to participate because they showed contrasting rhythmic responses, have different diagnoses but some challenges in common. It was anticipated these factors would enrich this inquiry. The therapeutic relationship had been set up over the year and was therefore well established.

The two participants attend the College daily from about 8:30am until 3:15pm. They are working with teachers and teacher-aides regularly throughout the day and are also

clients of therapists such as Psychotherapists, Occupational therapists and Speech and Language Therapists (SLT) who visit the Unit. While having regular contact with teachers and other therapists working at the school, the MTS was not able to be part of this team formally due to timetable restrictions.

The room used for music therapy is part of the music block at the College. It is a typical practice room, square and approximately the size of a single bedroom. It has a window to the outside on one wall. As this has been a distraction in the past, the colourful curtains are sometimes drawn. This makes the room dark and consequently fluorescent lighting is used. The room has a bench on one side used for shelving small percussion and wind instruments. Underneath this bench is stored larger instruments such as a bass drum, various drums, a cymbal on a stand, tuba, sensory box and two large exercise balls. There is a piano angled so that the MTS can have eye contact with the clients but not so it forms a physical barrier between them. A long mirror and white board are situated on the opposite wall. The room is carpeted and is kept at a comfortable temperature.

Participants

Participant K: an introduction

The Participant known as K for this study, is a vibrant 13 year-old with good comprehension of receptive language but has challenges to speaking. She has a diagnosis of severe verbal apraxia. She can often say the first syllable of a word, reads, writes and uses a highly developed body language. Phone texting was learnt during the year and she uses the telephone. As far as the researcher can ascertain, from playing board games and music with her, K has a good memory and powers of reasoning.

K's more global diagnosis, Trico-theo-dystrophy, was made by a visiting physician. This condition was the original focus of a literature inquiry, however despite extensive searching nothing was found. Symptoms include physical features of unusual dental structures meaning Ks teeth are prominent and protrude at a horizontal angle and her hair is rather coarse. Her teeth were to be operated on during the year but this was delayed. As a consequence, the course of the MT process and data collecting was uninterrupted.

K's fine and gross motor control and co-ordination appear reasonable. She is socially very aware of group dynamics and shows empathy for others, strong emotions such as

anger and joy and almost no frustration at the gap between her receptive and spoken language. There are siblings around at home and K has a small circle of friends. K came to music therapy sessions with another client each week.

K's case study (overview from session notes in Appendix E)

The following has been collated from the researcher's session plans, post session notes and video transcriptions of the clinical work.

The material for this inquiry, from six, half-hour music therapy sessions, was collected at the College K attends. She is a member there of the junior class (year nine) in the Learning Support Unit. While K is mainstreamed for subjects such as music, art, technology and sport, other learning is done in the home/base-room.

The MTS, having worked with K until this point as a part of her practicum experience, considers the sample of the last six music therapy sessions in the school year as generally representative of the year's work together and the MT process. The last, sixth session within the research period was however with K as an individual rather than as a part a duo as in sessions one to five.

The following music therapy methods and techniques, or ways of being with and playing with K, had been developed over the year and now form the basis for all six sessions of the inquiry period. The sessions included a variety of methods (vocal, instrumental and movement) and techniques such as song writing, improvising and the use of pre-composed songs. The guiding principles for the MT process included keeping the motivation for music as high and as solidly in K's control as possible. This was because she has had a great deal of speech and language therapy over her thirteen years and it was thought that music therapy could be a motivating and fun therapy for her. This premise was the rationale for group MT as opposed to individual; that is to provide a fun environment that stimulated as many speech and communication possibilities as possible, with a musical/ rhythmical/ movement base. Long term music therapy goals were to develop a sense of a regular, inner pulse and to form an association between this and speech patterns.

The over-arching goal was for K to develop a means of expression both musically and verbally.

K's typical MT session structure, its contents and a brief rationale follows:

1. A welcome song for framing the session, welcoming, and combining immediately the movement, speech and song. This used the kinesthetic, phonetics, visual, gross motor and patterning in an integrated way. Each person chose their own movement. K's was tapping her knees.
2. Choosing an instrument to improvise in dyads or together as a group. K chose the piano most times and primarily it was used for playing in the song writing segment. However an extensive improvisory dyad took place in the last session between the MTS and K.
3. In Song writing, and when revising past songs we had written, we all sat at the piano with a song book containing our previously composed songs and paper for further lyric brainstorming. This was to encourage speech, expression (content and production) and rhythmic entrainment phonetically with the group. A familiar or typical harmonic base was used by the MTS.
4. Attaching speech syllables co-ordinated to gross motor movements was developed during the MT sessions. This segment of the session was regularly chosen and extended in length and complexity by K. The technique was typically using speech sounds of words, phonetically in a chant like fashion synchronised or entrained to bouncing a large, exercise ball on the bass drum (flat on the floor). In the last session the same principal was employed but using claves and tapping with the MTS, in the same fashion that the traditional Maori stick songs are performed.
5. A final rap was used to revise and frame the session. It employed the same principal of integrating and entrainment of the rhythm, movement and speech.

Participant J: an introduction

The second Participant in this study, J, is a tall, slight, good-looking 19-year-old who has a diagnosis of autism. He shows many of the typical behaviours outlined in the criteria for autism in the DSM-1V-TR manual. These include impairment in social interaction shown in multiple ways. For example he does not seek to socialise, to engage in reciprocal play and consequently does not develop peer relationships. Although J is socially quite solitary, he is aware of people in the room. For example if strangers come into the small classroom his behaviour changes and he will often withdraw.

Although J rarely speaks he does vocalise a great deal, particularly when excited or anxious. His receptive language level is unknown. J displays the stereotypical autistic behaviour of 'flapping', with his hands forming a kind of dance in front of his eyes and when aroused this movement can become frenetic and intricate. This visual stimulation or release is often done at an amazing pace. Other examples of stereotypical behaviour used by J include complex whole-body movements, inflexibility of routine and persistent preoccupation with parts of objects. Occasionally J will suddenly become excited, wave his hands, vocalise and jump straight up in the air. This is not usually connected to what is happening in the group activities.

Although the team has introduced J to the Picture Exchange Communication System (PECS) as a visual communication, he has not shown the motivation to use this consistently. J does find moving from one activity to another challenging and appears to have periods of non-activity followed by more active cycles. When he walks he often feels his way with one foot bent to the side or behind him, perhaps assessing the space available to him. He has wonderful eyes and does connect with people and smiles and laughs at times.

In the music therapy room J appeared to enjoy looking at himself in the mirror shown by his interest and smiles. He appears to enjoy order, shown by always wanting his seat in the same place and when he goes to an event he is happy once he has established where he will sit. J usually sits on a chair cross-legged or he may prefer to stand. He enjoys running water, bubbles, rolling marbles and feeding animals such as the guinea pigs in the

classroom. His Independent Education Programme (IEP) focuses around learning functional tasks such as hair brushing and nose blowing with long term goals of encouraging independence, reducing anxiety and increasing attention span. J appears to know what he does or does not want to do and has behaviour to show this. He is particularly interested in posting things or throwing objects repeatedly. The posting has meant his own bodily holes such as his ears get objects pushed into them. J is generally quiet and in MT sessions he rarely moves away from his chair.

In an early assessment, from the first five music therapy sessions, J appears to be stimulated by and enjoys music. When J was asked to rate his preferred activities, music rated highly.

J's Case Study (overview from session notes in Appendix F1)

J came to 6 music therapy sessions once a week for about 20 minutes duration. The last two weeks J was unavailable for music therapy due to other activities that included a week-long camp and a day trip. Although this sample of 6 music therapy sessions is right at the end of the researcher's practicum experience of working with J, it is considered by the MTS as being typical of the year working with him.

The following MT methods and techniques have been developed over the year and now form the basis for the six sessions of this inquiry. The primary MT method was instrumental using J's preferred musical styles. These included those suggested by his Parents, the T/A and what J and the researcher discovered together. Feedback from others, such as people close to J, aligns comfortably with the 'Naturalistic Inquiry' characteristics of making use of external synthesis of understandings of the participant.

The contents and middle order of activities varied from day to day in sessions, depending on J's presentation and responses, but the instrumentation and framing 'welcome' and 'goodbye' songs remained constant. This was felt particularly important for J as he had shown that order was important. For example J would line up the chairs meticulously around the MT room before settling. The sense of order and consistency sought by people with autism is well documented (Wing, 1976). The MTS was continually

balancing receptive and active activities within sessions with J. Long term goals in music therapy with J were to develop a means of self expression and control of rhythmic order.

J's typical MT session, its structure and content with a brief rationale follows:

1. A welcome song to J by the MTS that was always the same. This was unaccompanied.
2. Receptive music was played to J as a way of creating a calm atmosphere to help him settle. This was usually music with predictable elements of music such as Bach or compositions by others in the baroque period, music of a calm, lullaby-style or an improvised piece using familiar harmonic structures.
3. The 12 bar blues was often used to engage J more actively. This had been discovered to be a style favoured by him.
4. Instruments were offered to J inviting him to join the MTS in the music making. His favourites were the small drum that stood on the floor. He liked to reach out with his hand to play this and also sought out the harmonica.
5. Celtic music was reportedly one of J's favourite styles (by Parents) and this was either played with the MTS on the flute, piano or a CD. The latter meant the MTS could facilitate playing with J. The claves became J's favourite for this activity.
6. At least once each session a choice of two instruments was offered to J and might include the claves or 'frog' (a wooden percussion instrument that could be typically stroked or hit with a small stick). Choice and independence were goals in J's Independent Education Programme (IEP) formulated by the professional team mentioned in his profile. The claves were used early on in the session as they were thought not to have the same highly stimulating effect that the bass drum, for example can have.
7. The autoharp was often offered after the more lively Celtic segment to calm J, as he often became excited. This was shown by vocalising more, rubbing his body (head, nose, genitals), faster arm movements or leaping up out of his chair briefly when listening or playing in the Celtic segment. Most often the autoharp was played with the

use of an adapted spatula, with a built up handle, but sometimes J would play with his fingers. It was played with the MTS facing J in close physical proximity, and the instrument gradually being introduced to his lap. The playing formed the accompaniment to songs sung by the MTS.

8. The bass drum was played with very soft, fluffy sticks, either with the MTS or T/A on one side and J on the other while the MTS sang songs, pre-composed or improvised about the activity, or with the MTS playing on the piano. Here the MTS often played pieces with strong rhythms such as marches or music that was familiar to J. It appeared that the bass drum playing could to be over stimulating for J and although it was often motivating, he needed time to withdraw. This segment was moved from the beginning towards the middle or end of a session.
9. Bongo drums, with the MTS close to J and interactively playing with or encouraging J, were sometimes offered at this time in the session. They provided a time J could be free and interactive, could play in a improvised style and in close physical proximity to the MTS. For this reason they were typically offered to J later in the session when he was more relaxed and perhaps did not need the highly structured music so intensely.
10. Goodbye rap/chant. This included a short session revision, an improvised rap of activities of that day, combined with a goodbye.

Each of the above activities were typically connected by the MTS singing about what we were doing. For example, songs about 'putting the instrument away ' and ' what shall we play' were sung by the MTS to aid transferring between instrumental activities.

3.2 Research Methodology and Design

Naturalistic Inquiry

The now universally accepted methodology, "Naturalistic Inquiry' aligns consistently with music therapy and is used in this investigative research study. Certain rigors of this approach were appraised by the experienced music therapist, Kenneth Aigen (2005). A brief explanation of 'naturalistic inquiry', its salient points, origins and details are in Appendix D.

Naturalistic inquiry is defined by Norman Denzin (1971) as "the studied commitment to actively enter the worlds of the native people (translated by this researcher as 'research participants') and to make those worlds understandable from the standpoint of a theory that is grounded in the behaviours, languages, definitions, attitudes and feelings of those studied" (cited in Wheeler, 2005, p. 352).

The term 'naturalistic inquiry' came from 'naturalistic viewpoints' and was used by Denzin (in Wheeler, 2005) and later it became 'constructivism' (Lincoln and Guba, 1990, cited in Wheeler, 2005). Guba, according to Aigen (2005), remains fully supportive of the methodological advances taken in the name of naturalistic inquiry. Due to size limitations, the reader is referred to Lincoln and Guba's (1985) five axioms of the Naturalistic paradigm found in Aigen (2005), with operational characteristics detailed briefly by the researcher (see Appendix D).

Although the area of interest for this study had been established in early March, it was early October when Ethical Approval for the research was established. There were some procedural challenges to the study due to this timetable delay. One of the five axiom's on which the naturalistic inquiry approach is founded is that there is "no strict cause-and effect relationship as all entities that researchers study are in processes of mutual simultaneous shaping…everything influences everything else" (Lincoln and Guba, 1985, p. 151). Every effort was made by the MTS not to knowingly alter the clinical work for research outcomes. As the year evolved it was anticipated that new understandings about the process of music therapy and the clients would be organically occurring. To not use these new insights would have been deliberately altering the course of clinical work.

Overview Of Data Collection, Treatment And Analysis

A flow chart of the procedures for data collection, categorising and analysis is now included aimed at aiding the reader.

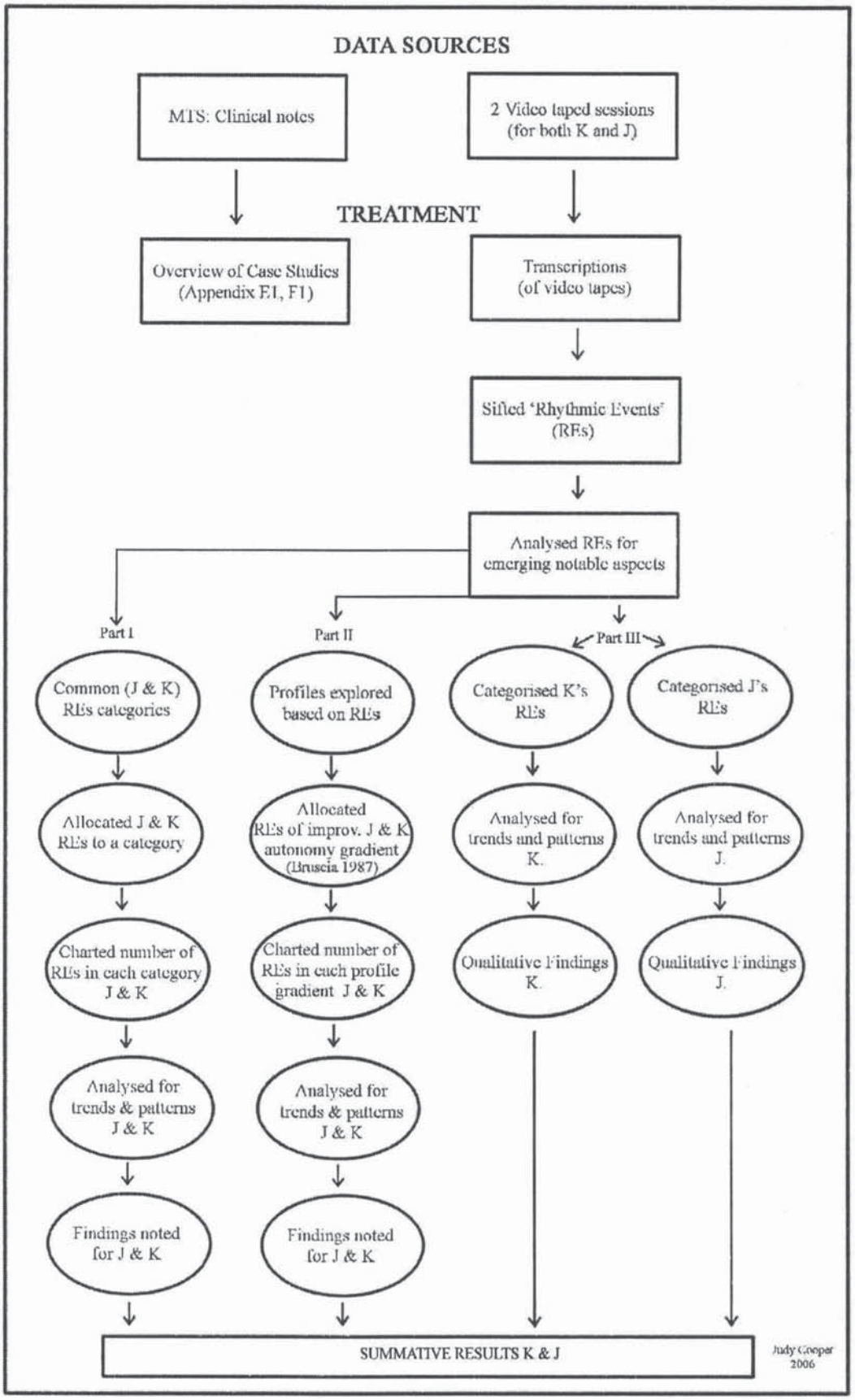

Figure 3 Data Collection and Treatment Procedures

Details of the flow chart:

Data Sources:

- Clinical plans and post session notes for the six sessions (for overview, see Appendix E for K, and F for J).
- Two videoed sessions for both participants, one early and one late in the research period.

Treatment of the session plans and post session notes:

- The MTS's session plans and post session notes were collated as an overview of the case studies for this research (Appendix E, pp. 114-118 for K, Appendix F, pp. 149-155 for J).

Treatment of videoed sessions material:

- Detailed transcriptions of two videoed sessions for both participants, one early and one late in the research period. (examples in Appendix. E pp.119-134 for K, and Appendix F pp.156-173 for J)
- Every event that focussed on rhythm, and/or its relevant context, was selected from the video sessions for analyzing (examples in Appendix E pp.135-148 for K, and Appendix F pp.174-182 for J)
- These 'Rhythmic Events' (REs), from the transcriptions of videoed sessions, were sorted and categorised;

  Part 1: by categories common to K and J.

  Part 2: categorisation by using Bruscia's (1987) 'Autonomy' gradient on a selected improvisation for K and J.

  Part 3: by individual categories for K and J.

- The categorised REs were analysed for patterns and trends as findings, forming the basis for the study's discussion section.
- Notable findings from REs were notated (Figures 4-10, pp. 62 - 67).
- Summative Results for K and J, from Parts one, two and three, formed the basis for the discussion section.

Data collection and treatment

Procedures for data collection

There were eight weeks left in the school year when ethical approval was gained for this research study. The data collection was slightly different for the two case studies and will be detailed separately. Due to an elongated process for ethical approval, the small number of 6 sessions did not allow for sequential analysis, consequently trends and emerging patterns with their therapeutic significance have been considered in detail.

The data collected for this study includes videotapes of the MT sessions and clinical notes.

K's data collection

K attended six MT sessions, during the available eight weeks following ethical approval. A timetable mix-up occurred the first week and the MTS was ill for the last week of the year.

Video footage of two full sessions and one segment of a third was collected. The complete videoed MT sessions were of the first and last sessions with the segment videoed filmed near the end of the fifth session. The full sessions were filmed by a student teacher whom the participant appeared to trust.

The MTS/researcher made session plans and post-session notes of the six sessions. For an overview from these see Appendix E.

J's data collection

Six MT sessions were held during the available eight weeks following ethical approval. J was unavailable for the last two sessions.

Video footage of three sessions was taken, one of which is only J's midriff but does have sound. A further session segment only was videoed, while a technical failure meant a fifth session was not taped. Due to J's sensitivity to new people in the room, a video camera was set up on the piano that faced him. He appeared non-participatory during the first

session that the camera was set up like this. Taking supervision on how to manage this data collecting the researcher continued with the camera work as often as was possible. The beginning of the next session was challenging both for the researcher and J as other College students had come into the room while she was collecting J from his classroom, set up electric gear everywhere and were sitting in J's favourite chair. The clinical situation was considered more important than the research data collecting although part footage was managed.

The MTS/researcher made session plans and post-session notes of the six sessions. For an overview of these see Appendix F1.

Procedures for extracting Rhythmic Events (REs)

Following transcriptions of the videoed sessions, the researcher extracted observable examples of 'Rhythmic Events'. The definition of a 'Rhythmic Events' (REs) was taken broadly by the researcher to include any behaviour (musical or personal) that appeared to be in response to, related to, or was initiated by the rhythmic activities in the sessions. Notes relating to RE extraction are as follows:

- Where the notes describing REs refer 'to the music', it is inferred that the beating/tapping/movement is synchronised to the external pulse.
- These 'Rhythmic Events' were noted as they occurred in sequential order in sessions.
- 'Rhythmic Events' are tabled in note form (full details in transcriptions, Appendix E, pp.119-134 for K and Appendix F, pp.156-173 for J.
- LH refers to (left hand); RH (right hand); REs (Rhythmic Events)
- A few 'Rhythmical events' may include several musical behaviours that occurred within a single event.
- By way of example some extracted REs, randomly taken from one session for each participant, are presented below in the Findings; complete REs are tabled in Appendix. E, pp. 135-148 and F, pp. 174-182.

- Transcriptions from the earliest possible videoed session and the latest possible videoed session in the series of six sessions were used for this extraction process of REs. For Participant K the extracting of REs was from session one and six. For Participant J the extracting of REs was from session four and six.
- The rationale for selecting J's session four, in the middle of the inquiry period was due to technical problems with the videoing combined with disturbed contextual events.

Within 'Naturalistic Inquiry' researchers are encouraged to select data which is, "more likely to hold the answer to specific research questions, concerns or interests" (Aigen, 2005, p .355). It was considered J's Session four fitted the criteria.

Background to categorising

Many efforts at categorising and coding the 'Rhythmic Events' of sessions seemed clumsy with overlaps between groupings and different categories arising for each client. What did emerge from the data transcriptions and sifting out of 'Rhythmic Events' (REs) were some strong qualities from each participant's findings.

For example participant K, throughout the session data generally but particularly in the piano improvisation of session six, displayed high independence, initiating a large percentage of 'Rhythmic Events' with what appeared to be exceptionally inventive styles. The other striking aspect was that the events in this piano improvisation were largely drawn from a rhythmic language or vocabulary, in the form of 'motifs' that had been established on the piano over the study period primarily out of a song writing segment. Words were originally attached to these 'motifs' and were based on K's comfortable speech capability of one to three syllables. Later the piano improvisation was strictly instrumental with no verbal input.

The striking aspect in J's 'Rhythmic Events' was his varied body and musical language. They had been difficult to observe at the time due to their minuteness of movement and unusual location, for example; in scratching his hair/ stroking leg, or through adaptations of stereotypical movements. The videoing for this inquiry made this more transparent.

Wigram (2004) offered a structure for analysis that, as an experienced clinician and researcher, he had found useful when specifically working with children who have communication disorders. Procedure he uses, derived from the Improvisation Assessment Profiles (IAPs) (Bruscia 1987), is one that focuses specifically on musical elements as the basis for analysing change or lack of change in clients. Wigram (2004) currently considers this analytical tool to be "the most comprehensive and relevant to explain the function of the music" (Wigram, 2004, p. 217). He notes that its use in its original form, devised by Bruscia (1987), has been limited due to its extreme rigours of complexity, detail and extensive methods of analysis. Of the five specified groupings for potential analysis, autonomy, variability, salience, tension and congruence, Wigram uses the two profiles of autonomy and variability "most frequently for the analysis of musical material with children who have communication disorder (Wigram, 2004, p. 219).

The above analytical tool from Bruscia and Wigram appeared appropriate for this inquiry to meet the need to organise, group and analyse the 'Rhythmic Events' of people with communication disorders. There were two principal challenges in using these profiles, as understood by the researcher.

Firstly the profiles were originally designed for analysis of an improvisatory style of MT process. The methods used, in music therapy with the participants of this study, were a mixture of precomposed, extemporising and improvisation. How strong and consistent would the findings be if the Bruscia-Wigram profiles were applied? Darnley-Smith (2002) considers that music making in music therapy is along a continuum, and advocates,

> " the process of moving between musical structures in improvised music therapy again is itself an improvisation, involving the facilitation of spontaneous choices which might allow unconscious material to emerge, whether through improvised sound or a pre-composed song" (Darnley-Smith (2002, p. 83).

Wigram asserts that Bruscia's IAP's are suitable for a variety of applications, methods of analysis and methods of interpretations.

A second challenge emerged on examining Bruscia's original complex scales and their criteria for the IAP's. It became apparent that the 'Variability Profile', recommended by Wigram, could not be consistently applied to both participants. The criteria for the

'Variability Profile' was dependent on an inner pulse establishment. K did not appear to have this well formed.

Part 1: data categorisation and treatment procedures

- The sifted REs from two videoed sessions for each of the two participants were categorised by type, with commonality being found between participants.
- Each category below was allocated a number one to eight.
- REs were placed in only one category by the event's most dominant feature.
- The number of REs in each category was then counted for frequency within those categories.
- This process was done for both participants.
- Findings from this process were noted with respect to trends or patterns of interest for both Participants.

(The terms: Beating, moving or playing are synonymous for these event category descriptions.

Part 2: data categorisation and treatment procedures

Autonomy profile using REs from improvisation transcripts

Bruscia's (1987) IAP's Profile for Autonomy, using a rhythmic aspect, was applied to similar segments of the transcriptions for both K and J. These segments were taken from 'Rhythmic Events' sifted from videoed session transcriptions. Both were the only events in these sessions of this type, noteworthy for their extension and variety. These experiences were considered to be significant for their engagement by both participants:

- A free improvisation: Session 6 (K and MTS – piano, intermusical experience)
- A free improvisation: Session 4 (J and MTS – bongo drums intermusical experience)

'Rhythmic Events', from the improvisation transcriptions were allocated a gradient of the Autonomy Profile and counted for their frequency. Findings from this process were noted with respect to trends or patterns of interest for both Participants.

Criteria for 'Rhythmic Figure Autonomy' abbreviated from Bruscia, (1987, p 470) (full text in Appendix G)

Dependent: client takes the follower role exclusively, depending on the partner in all rhythmic matters
Follower : The client takes the follower role more often than the leader role, occasionally taking the latter role to establish or change the rhythmic ground (pulse).
Partner: The client takes the leader and follower role with equal frequency, sharing control of rhythmic ground. Sets tempos, meter and subdivisions through interaction with the partner.
Leader: the client takes the leadership role more often then the follower role and tends to control the rhythmic ground (pulse). Occasionally takes the follower role.
Resister: The client evades or destroys any tempo or meter relationship with the partner. This is most often accomplished by playing irrelevant or conflicting tempos, meters, and/or subdivisions.

Part 3: data categorisation and treatment procedures

Categories for this section were formed from the sifted 'Rhythmic Events' (REs) of the two videoed sessions' transcriptions for each participant and grouped for interest by focusing on the participant's individual profile, both rhythmically and within the interpersonal relationship. This was applied in the same way for both participants.

The Method section has noted the study's methodology of 'Naturalistic Inquiry', the context, introduced the two Participants with their case studies, and procedures for data collection and treatment. A three-pronged approach was established, outlined briefly below in the Findings.

4 Findings

The Findings section is divided into three parts (refer to Figure 3, p. 50 for an overview). Firstly findings were sought, from the transcribed and extracted Rhythmic Events (REs), by grouping the *types* of events that occurred. A commonality over K's and J's was found. Secondly, analysing was undertaken to understand the client's roles within the inter-musical experiences using Bruscia's (1987) Autonomy Profile (see Appendix G), focusing on a rhythmic aspect. A third perspective uses findings, from the two transcribed videoed sessions, individually for each Participant K and J. These three means of analysing, provided material for the Summative Findings around which the discussion is formed.

Examples of REs followed by notation of selected REs precede the Findings for Parts one to three.

Extracted Rhythmic Events (REs)

K's extracted REs; randomly selected examples

Examples of REs, one from Participant K, and one from J were taken at random to demonstrate the type of extracted 'Rhythmic Events' and how they were charted. Due to the amount of data generated, full charting of REs are in Appendix E p.135 for K and F p. 174 for J. Full details of specific RE's placement into categories are available on request.

Table 2 K's extracted REs: randomly selected examples

K's Session 6, REs number 15) to 21): 24/11/05 'Rhythmical Events' (REs), extracted by the researcher from transcriptions of this videoed session; a random selection All observable events below are K's in the LH column, unless noted otherwise and MTS response in the RH column, unless noted.	
15) LH clusters fast, up the piano, flat fingers	Pause – mirrored idea downwards towards her
16) 3 low sound clusters (2 rapid and one longer)	Repeated high
17) Single cluster (cluster at the top) leaning over MTS	Sound cluster at bottom, leaning over K
18) Single, low cluster	Sound cluster, top
19) Single cluster; middle	Cluster, middle
20) 2 rapidly produced clusters (one lower in pitch)	Mirrored
21) repeated	Similar, together with K
	K: Head dropped and playing stopped

Table 3 J's extracted REs: randomly selected examples

Session 4, REs number 10) to 14): *3/11/05;* (T/A, familiar to J, was present) 'Rhythmical Events' (REs), extracted by the researcher from transcriptions of video footage of session 4; a random selection Occasional grouping of 'Rhythmical events' has been noted for the flow. All observable events in LH column below are J's unless stated otherwise, RH column are MTS's responses unless noted. The numerical number assigned to each RE below was as it occurred sequentially in the session.	
10) intermittent beating in air– often 1st or 3rd of the bar.	Blues – change in energy & duration J; acknowledged the changes, by smiling
11) 2 relaxed, pulsed taps plus 1 definite tap on the 1st beat of the bar – on small drum	When MTS personalised blues song J; Laughed, hid but good eye contact
12) kept RH beating after song finished	
13) rubs left eye in a regular pulse	Matched J's pulse, Celtic flute music J; laughed after 5 synchronised beats, eye contact, hid & peered out again
14) 8 regularly placed beats, claves	Flute, matched J's pulse, familiar music. J; laughed as the last 3 beats are synchronised with MTS's pulse.

Notation below of selected examples of RE's (Figures 4-10, pp. 62-67)

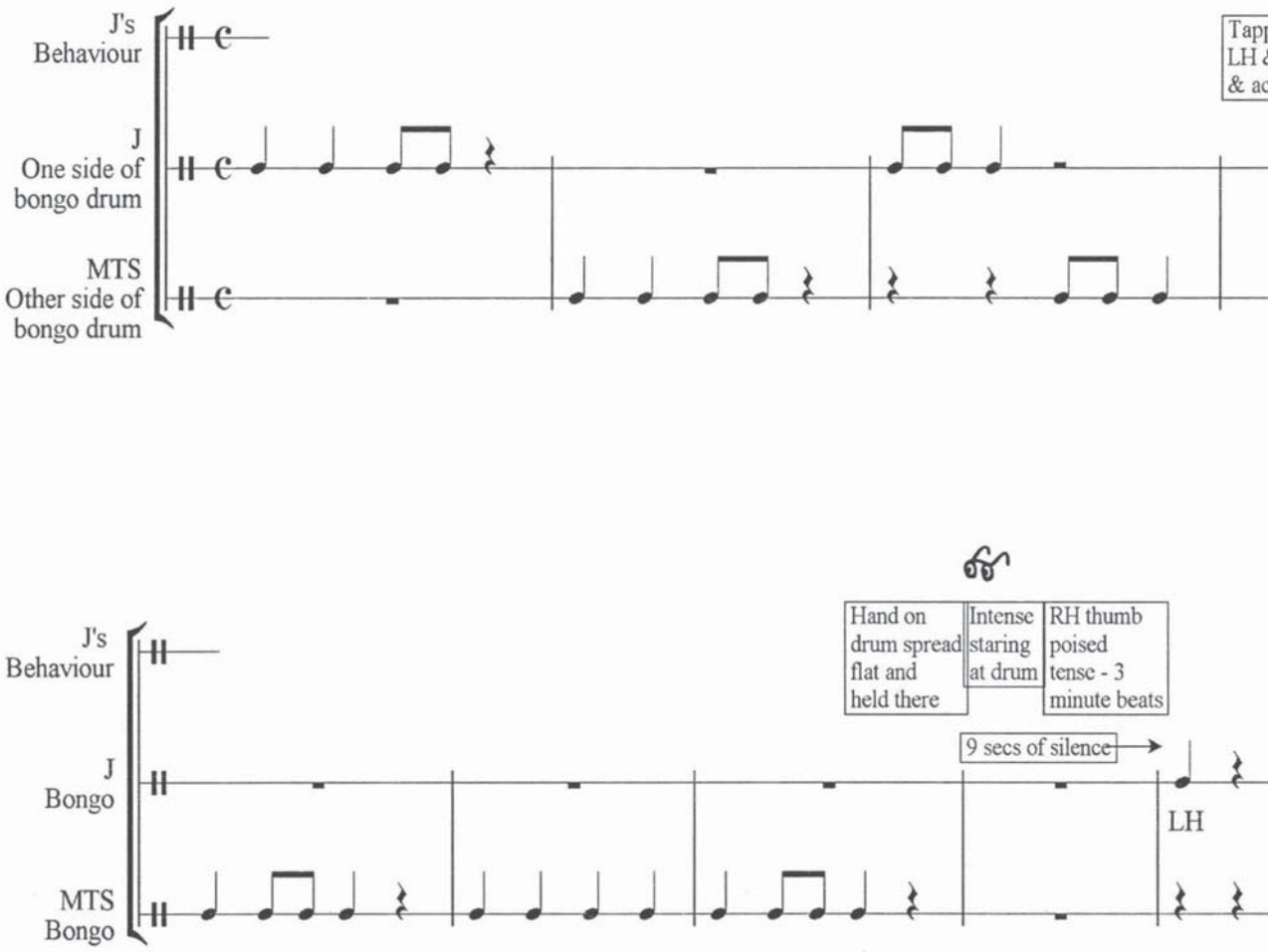

Figure 4 J:Session 4 Bongo Improvisation

Figure 5 J:Session 4 Bongo Improvisation Segment 2

Figure 6 J: Session 4 'Blues'

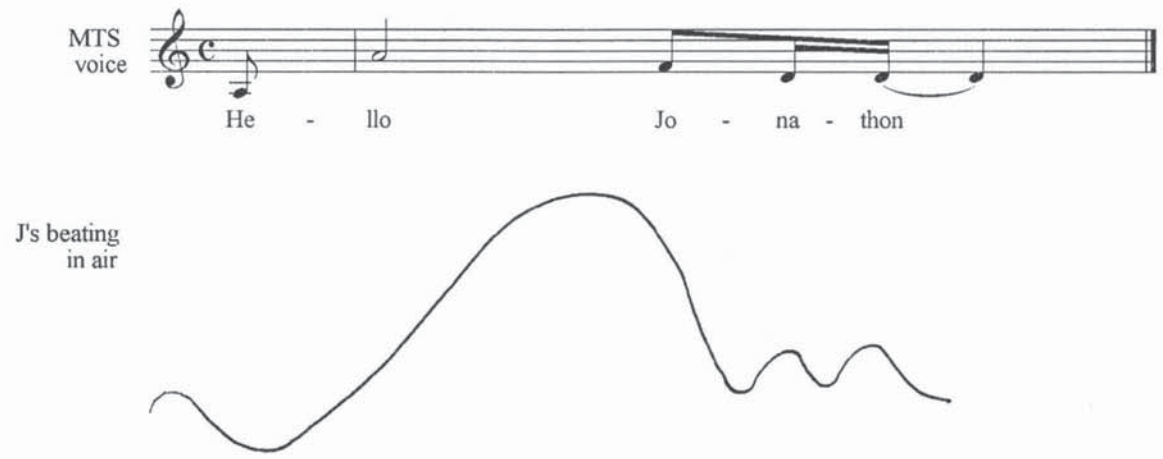

Figure 7 J: Beating in air

K: Session 6 'Piano Improvisation'

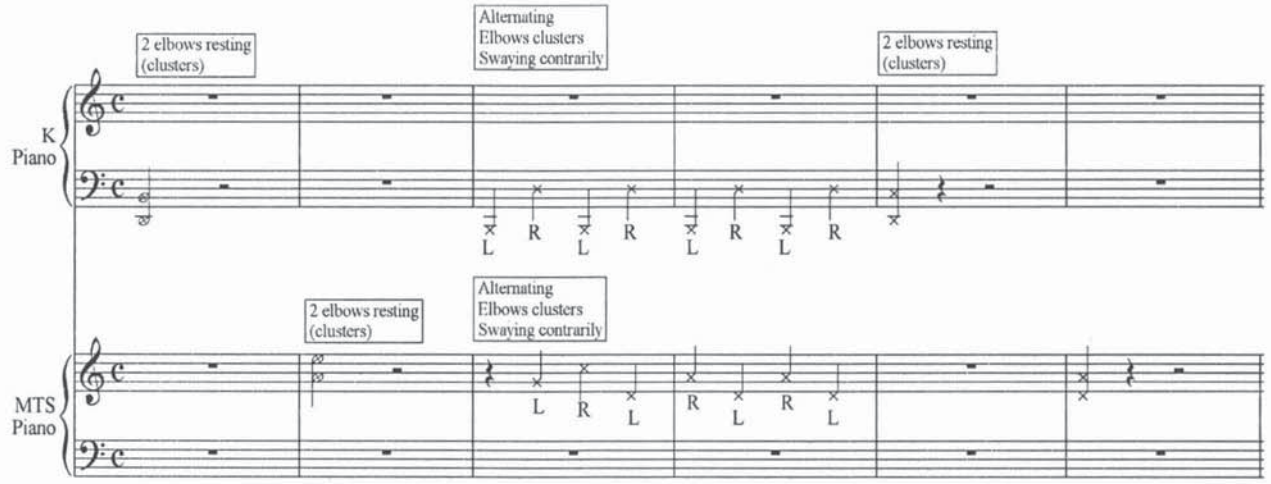

Figure 8 K: Session 6 Piano Improvisation

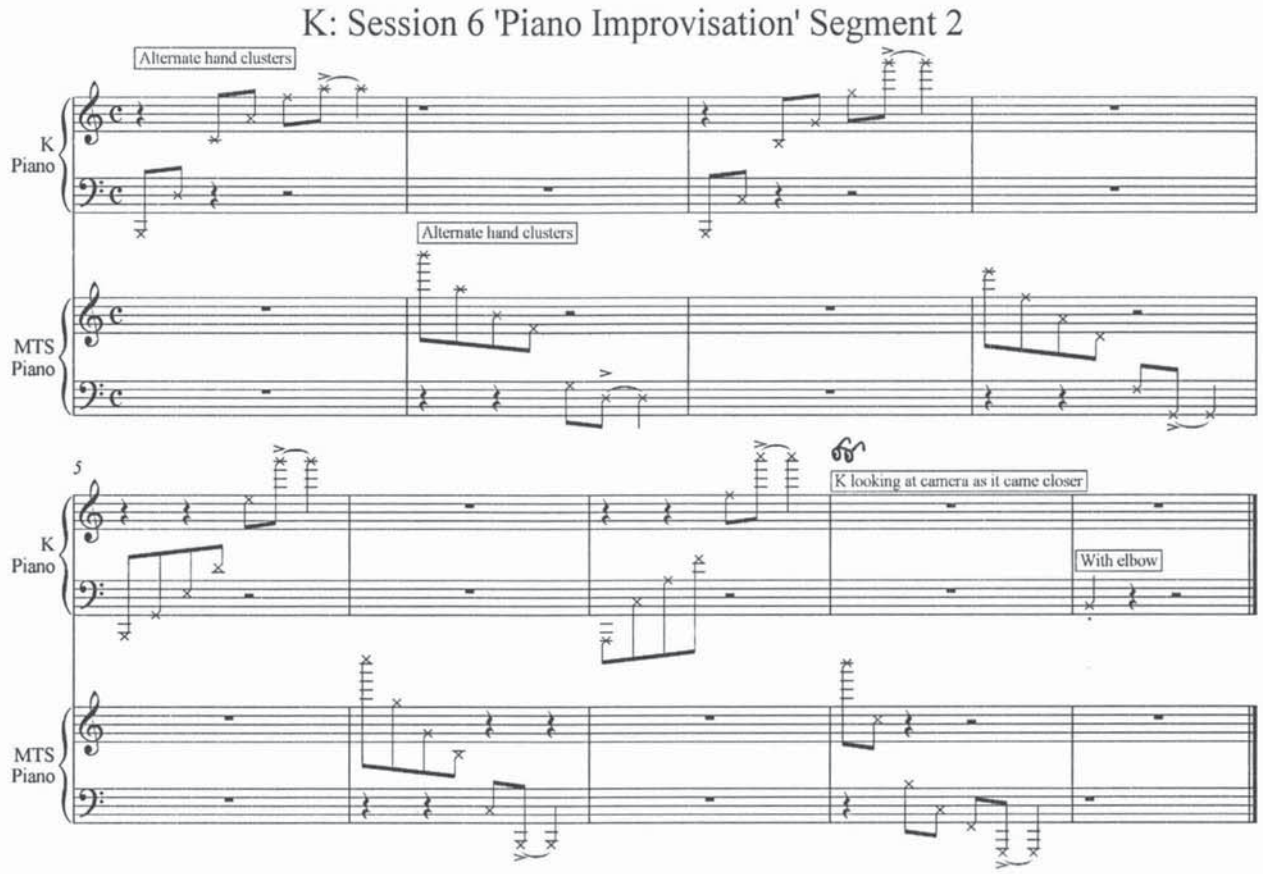

Figure 9 K: Session 6 Piano Improvisation Segment 2

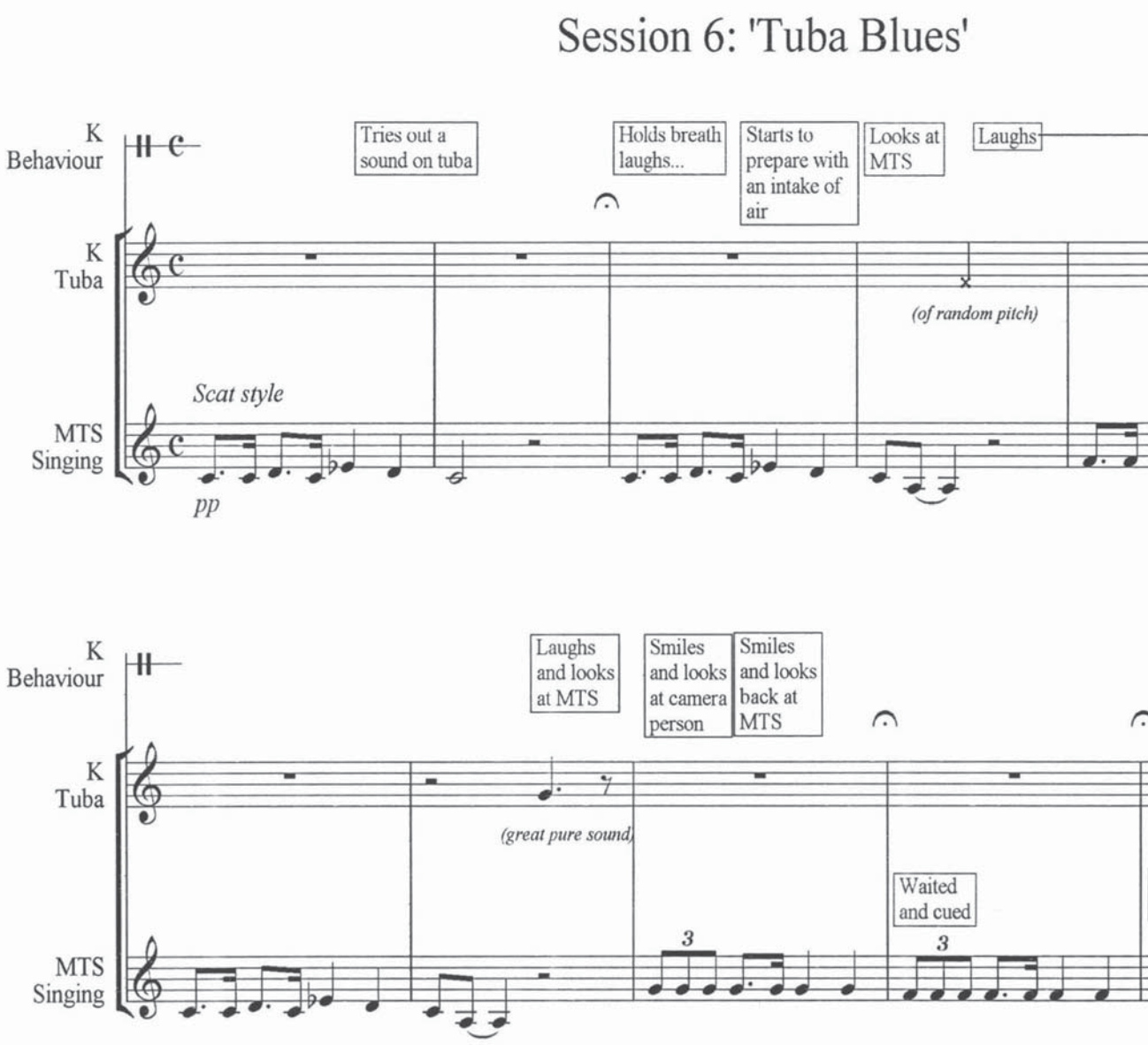

Figure 10 K: Session 6 Tuba Blues

4.1 Findings Part 1: Categories of REs Common to Both Participants.

Category descriptions below: formed from 'Rhythmic Events' noted in K and J's data.

1) *Random beating*: Haphazardly placed rhythmic figures in respect to the pulse or rhythmic ground. No noted intentional placement of figures to coincide with the pulse.

2) *Variable*: Both pulsed and random rhythmic figures occurring within several sequential events within short succession

3) *Pulsed playing*: Intent or pulsed beating/playing/moving established or synchronised with an external pulse.

    a) Cued: musically/ temporally; by aural/ visual means; internally or facilitated by MTS.

    b) Cue created by the above means (3a) between improvised interchanges (client & MTS)

    c) Intermittent: gaps noted in playing, through disconnection, with pulse re-established after a short period of time.

4) *Rhythmic figure*: The pulse is subdivided to form rhythms, or potential/possibility of a pulse and figure occurring together within the person. Typically this is with 3 or more notes

5) *Meter awareness*: Pulse forms patterns by regular variation – typically into measures.

6) *Tempo change*: Change in the tempo of the pulse or speed. For this study it assumes a regular pulse or speed is already established.

7) *Hugely accelerated beating or Stereotypical beating/flapping*

8) *Statement*: These types of client initiated statements were part of a bigger 'Rhythmic Event'. Examples noted were; a definite single sound, rapid succession of two sounds, tremolo, pause or silence.

Table 4 Part 1 'Rhythmic event' categories: Participant K and J

REs allocated to each category from two entire MT sessions.

Rhythmic Event category	K's number of events	J's number of events
1) Random beating	6	1
2) Variable	3	0
3) Pulsed playing	3) 17, (3a) 15, (3b) 19	3) 11, (3c) 11
4) Rhythmic figure	13	11
5) Meter awareness	17	0
6) Tempo change	6	4
7) Hugely accel. Beating	1	8
8) Statement:	26	4

Participant K

Findings from REs over two sessions (using categories in common with Participant J)

- Notably, there were 26 *statements.* These mostly occurred in the piano improvisation of session six and could be considered evidence that K was using the music as an expressive language to communicate.
- The use of *random beating* in sessions was in a relatively small number of REs.
- K's use of the pulse was facilitated by the MTS cueing her for approximately two-thirds of the events.
- Meter awareness was noted as high when considering K is challenged by pulse order. K's awareness of the meter occurred always in partnership with or led by the MTS in

the piano improvisation and was established by *manner* of playing. An example of K's meter awareness is when regular timbre patterns formed a meter.

- The rhythmic figures, noted in 13 REs were simple subdivisions of the pulse that could also have been classified in '3)' as a pulse or ground. They occurred in both the improvisation and song writing segments at the piano.
- The hugely accelerated beating in the form of flapping occurred at the height of the piano improvisation, with both hands flapping alternately.

Participant J

Findings from REs over two sessions using categories in common with Participant K

- J rarely used random or varied REs and when he did, it was right at the beginning of the bongo improvisation.
- Approximately a third of all the REs, where J was considered connected to the pulse by beating in some way, were also noted as disconnecting from the activity.
- J displayed some pulse subdivisions with more complex understanding of rhythmic order. This occurred in the 'blues' music and bongo improvisation. Refer to Figures 4, 5 and 6, pp. 62-64.
- Hugely accelerated beating was noted on eight occasions when J appeared to abruptly accelerate uncontrollably.
- Initiating opportunities for four RE 'statements, came in the bongo improvisation.

Findings from Part 1 will form the base for the summative findings at the end of Part 3 from where the REs will be examined and discussed.

4.2 Findings Part 2: Exploration of Data Using Improvisation Assessment Profiles (IAPs) for Rhythm (Bruscia 1987)

Participant K

REs from K's improvisation on the piano with MTS – extracted 'Rhythmic Events' taken from transcriptions of videoed Session 6 (Appendix E, pp.137-145).

Table 5 K's Autonomy Profile: Rhythmic figure

	Number of events (total of 90 interchanges)
Dependent	0
Follower	4
Partner	23
Leader	63
Resister	0

Of the four events where K was in a *follower* role, three came in the first seconds as a partnership was setting up.

The 23 *partnered* Rhythmic Events were initiated by the MTS and sustained by K over three or four interchanges until she initiated out of the partnership into leadership.

Over a third of the interchanges were with K in the *leadership* role where she initiated a sound or rhythm that was varied from her last event by the manner in which it was played, more than the rhythmic content.

Although there were no events classified where K was in a resister role, of 11 events where the MTS initiated a new rhythm or varied from K's offering, K replied eight times by initiating a different rhythm, while three times she mirrored back. These eight replies have been classified in the Leader category.

Participant J

REs from J's Free improvisation on the bongo drum with MTS –extracted 'Rhythmic Events' taken from transcriptions of videoed Session 4

Table 6 J' s Autonomy Profile: Rhythmic figure aspect

	Number of 'Rhythmic Events' (of 22 events)
Dependent	0
Follower	3
Partner	1
Leader	11
Resister	7

Of the three events where J was in a *follower* role, one RE came at the very beginning and two at the end.

The role of *resister* occurred when J uncontrollably, not appearing to be under his will, accelerated the pulse, destabilising it and resulting in withdrawal. Bruscia's idea of the *resister* role may have implied a willed or conscious event, but for discussion purposes they have been included in this section.

Five of the 11 events where J was in a *leadership* role came from controlling the accelerated pulse noted above.

Within the events where J was in a leadership role, he did also form partnerships in a 'call and response' reciprocal style.

4.3 Findings Part 3: Analysis of REs for General Findings

Participant K

Table 7 K's categories for individual, qualitative analysis (from REs)

Rhythmic vocabulary formation
Use of this rhythmic vocabulary
Self initiated speed of vocabulary within the 'Rhythmic Events'
Stability of pulse
Language and rhythm overlaps

The rhythmic vocabulary used by K was a simple, one to three rhythmically pulsed 'motif'. These motifs emerged originally on the piano in song writing segments of the sessions and they had words attached. A simple, two pulsed 'motif' emerged first, initiated by K playing (moving) synchronised or organised within herself, simultaneously speaking self-chosen words of two syllables. These two pulses extended to three and later to fast, multiple, regular clusters scampered up the piano that appeared to form more like one slow pulse with inner rhythms rather than very fast pulses. However there was little to no real stress on these notes to form patterns except the final note of runs being heavier.

The improvisation data showed K to be highly inventive, using a small vocabulary of one to three rhythmically pulsed 'motifs'. These 'motifs' were used extensively by K in a variety of ways throughout the piano improvisation of session six. When using the rhythmic 'motifs' K became ordered enabling imitation and repetition, including variations used as a communicative language in the improvisations. 'Rhythmic motifs' were used with and without syllabic speech. The use of these 'Rhythmic motifs' was generalised across activities. For example they were taken from the 'ball on bass drum' segment, where syllabic speech was synchronised rhythmically with movements, across to the improvisation on the piano with no speech involved.

K's self-initiated playing speed is almost quartered (from about MM= pulse of 176 to 42) when speech is added to movement. This is in contrast to the lively and fast speed of K's movements and playing when freely improvising without speech.

There are signs of the first few pulses emerging in K's playing, being physically determined by gross motor movements eg. individuated elbow waddling on the keyboard. The maintenance and extension of this pulse was within a partnership, where the MTS synchronised with K's pulse. This pulse was considered stable for about eight beats. It was noted that the emerging or entrained pulse beating/playing returned to a more 'random' form when K was unconsciously doodling with sound eg. on piano in the song writing segment.

K's comfortable syllabic speech length is one to three when engaged in gross motor, rhythmic movement. However speech length synchronised with movements was extended to between four and six syllables at times. Rhythmic 'motifs' matched K's functional speech in length of syllables, complexity, and lack of stresses generally. It was found as the number of syllables used increased, the ability to say and keep a steady rhythmic flow decreased. For example it was noted that it was not possible for K to speak, synchronised to a gross motor movement, over six syllables consecutively. When K did attempt to say six syllables consecutively, synchronised with gross motor movements, it was found that the last two to three syllables were done with more confidence than the first three.

'Rhythmic Events' demonstrated that the sequencing of events where receptive language only was involved, without productive speech or movement, was cognitively easy and understood by K. For example she understood and remembered the sequential order of soups in a song titled 'soup song'. However the sequencing of events when productive speech and movement was required as part of the activity became very challenging for K. For example in the opening 'welcome song' where there was a sequence of rhythmic moves to the lyrics.

Participant J

Although REs from session four and six were used, further data collected when J appeared relaxed and healthy in Session four also contributed to this analysis.

Table 8 J's categories for individual, qualitative analysis (from REs)

Connecting to the music
Maintaining connection
Communicating; rhythmically and interactively
Pulse stability
Control over REs events in MT

J appears to have a well-developed sense of an inner pulse, connecting to the external rhythmic ground by various means. He favours hand drawing or beating in the air, tapping on anything but especially his body. For the latter he uses small, often minute movements to feel the pulse. Gross motor movements were typically instrumental playing (drumming, claves, autoharp) and flapping/drawing/beating in the air. J also used unique ways of feeling the pulse. These included rubbing eyes, stroking trouser leg, forehead stroking with fingers in his hair, stereotypical flapping adapted to the pulse, tapping on head, pic (spatula), drum stick head and autoharp. J understands and feels rhythmic figures around the pulse. For example he demonstrated an understanding of dotted rhythms and patterns of the 'blues' style of music by beating these. There appears to be a pulse tempo enjoyed by J at about MM= 52 per pulse. It was displayed in the blues, being sometimes physically determined by the manner in which he was beating. J played rhythmical patterns with ease in a number of different ways. For example he used a complex mix of hand, fingers or fist by scraping, tapping or stroking.

The pulse as occurring regularly in time, made J's maintenance of connecting to this pulse observable. Staying connected to a regular pulse was noted as being challenging for J as 'attending' was erratic. Rhythmic cues were found to facilitate J's 'attending'. Examples of these cues include those rhythms that inherently required an answer (eg. a commonly

used one; long, quick, quick, long, long (pause) J answered long, long) and the use of the anacrusis (also known as an upbeat). J's 'attending' was noted as being enhanced by the use of highly ordered, predictable styles of music such as that of the baroque period and the 12 bar blues.

Communicating rhythmically and/or interactively occurred when J repeated, imitated the MTs rhythms reciprocally during the bongo improvisation. During MT sessions communicating also occurred in REs by J's body language or behavioural responses displaying he had understood variations/changes within the music making experience. These responses were shown by J through complex, non-verbal body language of varying quality and duration. For example these communicative responses to the REs included eye contact or aversion, intense staring, smiling, laughing, leaning forward and squirming in his seat, flapping, vocalising, gathering instruments towards himself or pushing them away, leaping up, leaving or 'non-attending'.

When actively involved with music making in MT, the findings appear to suggest J responds emotionally, with often abrupt, seemingly uncontrollable acceleration of the pulse that de-stabilises it. Three contextual examples of pulse stability being threatened were found from the collected information. The first example of this acceleration occurred when J experienced communicating consciously by controlling/initiating a musical event (interactively) and heard that communication mirrored back to him (by MTS). Another example of a rapid accelerated response noted was when J was repeatedly trying to put the clave in his eye. Both T/A and MTS requested verbally and physically prompted him to remove this from his eye. He did so but J's pulse tempo increased. A final example of this rapid acceleration of the pulse came when J was asked a direct question verbally by the MTS (re continuing the activity).

Noted were J's behaviours that often appeared to control events in music therapy sessions. These included hiding (behind his arm); stopping his RH flapping or moving with his LH holding it down tightly; 'picking' at objects eg. jumper, beater or frog (instrument); he appeared to intentionally freeze muscles making moving/playing difficult; handed back instruments; placed his hand on the source of sound to stop playing (eg. drum); RH transferred beating to another part of the body (head, torso, leg); J leapt out of the room.

4.4 Summary of Findings: from Parts 1, 2, and 3

Participant K

A high number of REs (26 of 123) were considered 'statements' of sound, or lack of it, as communication. 25 of these 26 came in the piano improvisation of session six. The REs containing 'random beating' were small in number (six of 123). K's use of a pulse in REs was facilitated by cueing in approximately two thirds of events. In the other third of REs where a pulse was evident, it was considered to be developing internally.

Rhythmic figures noted in REs were very simple subdivisions of the pulse being almost synonymous with the ground pulse. These 'motifs' were used by K in an inventive manner, with their order enabling imitation and repetition for use in communicative interchanges. The rhythmic 'motifs' were generalised by K through to other REs.

If the 'motifs' were attached to speech the self-chosen tempo by K was slow (about MM = 42 per syllable) while without speech the speed quadrupled at times. Rhythmic 'motifs' matched K's speech in length of syllables, complexity and lack of stresses. In speech, synchronised to rhythmic playing/movement, the stability of rhythmic flow in time decreased as the number of syllables increased.

A very strong leadership characteristic was identified for K in the REs of the improvisation. Additionally the Partnerships, where rhythmic synchronisation occurred (MTS initiated), were interrupted quickly by K initiating out of this role back into leadership. The excessively strong leadership tendency, in the REs of K's improvisation, possibly erred on the resistant end of this gradient eg. only three of eleven rhythms offered to K (by MTS) were answered). Although the findings revealed K to be most comfortable in a leadership role she showed flexibility to encompass other roles, namely 'follower' while tolerating 'partnership'.

Participant J

A well developed inner sense of the pulse was indicated in J through REs. in which he was connected also to an external pulse. To connect into the pulse, J favours hand drawing/beating and tapping on his body with minute movements. He revealed an ease of

playing complex patterns. It was noted in the REs that J regularly and intermittently disconnected from the external pulse. J rarely used 'random' or 'varied' playing.

There is evidence in the REs to suggest J uses some pulse subdivisions, dividing equally and in the dotted form, with higher understandings of meter and harmonic structure.

Hugely accelerated beating in REs reveals these experiences are something that happens to J beyond his willed control. Findings show these accelerated, uncontrolled beatings became 'flapping' in the air supporting evidence that they are one in the same. There is a high occurrence of these hugely accelerated beatings in the improvisation eg. in five of the eight REs where accelerated beating occurred. J's means of controlling or self-regulating out of this accelerated, inflexible beating or 'flapping' were noted also as varied.

J communicated rhythmically and in a reciprocal manner in REs within the structure of 'call and response' provided by the bongo improvisation, initiating 'calls' and/or 'statements' and responses. REs identified aspects of J's complex body language in communicative responses within inter-musical activities.

Findings on the autonomy scale suggest, within the improvisation examined, J's role changes constantly from 'dependent', 'follower', possible 'resister', 'leader' and 'partner', requiring him to be flexible throughout. Participation levels by J, in REs and generally within MT, were identified as being hugely varied from session to session.

Due to the length of this inquiry, a tabulated view of commonalities and differences found in K and J's findings, already noted independently, is presented below

4.5 Commonalities: Findings from REs.

Table 9 Commonalities: Participant K and Participant J

- Random beating was in a limited number of REs
- Rhythmic figures were played in an inventive manner
- Rhythmic figures were used in improvising to communicate reciprocally
- Emerging possibility for using vocal language in some form in the future
- Used simple rhythmic subdivisions of a pulse
- Appeared to understand basic harmonic structure
- Enjoyed rhythmic communication, shown by eye contact and smiles
- Generalised rhythmic figures across REs
- Used rhythmic 'statements' to control the REs

4.6 Differences: Findings from REs

Table 10 Differences for Participant K and J

Participant K	Participant J
• internal pulse developing	• well developed sense of internal pulse
• Relies heavily on cueing for connection to external pulse	• connects with ease to an external pulse
• engagement maintained	• intermittent disengaging
• uses simple subdivisions of the pulse	• understands and beats more complex rhythms, but still part of the ground pulse
• does not show awareness of meter independently	• displays meter awareness
• seeks communication	• engages in but does not seek communication
• uses whole body movements in REs	• uses parts of body, often minute movements in REs
• displays a leadership role in REs	• displays unstable roles in REs
• rhythmic 'motifs' match speech length	• Speech not used
• Improvisation consisted of rhythmic 'motifs' with variations	• improvisation used rhythms freely as if creating
• imitation ability intermittently used	• understands and uses imitation
• enjoys a fast, fluid tempo in the improvising	• is hesitant and initiates a slower tempo in the improvising

5 Discussion

This section will view Participant K and J's summative findings to determine what these results show, any interpretations that can be made from them while acknowledging their limitations. It might be useful here to reiterate 'naturalistic inquiry' characteristics briefly and how it embraces the researcher as the primary data-gatherer, analyst and reflector. While acknowledging subjective aspects, this methodology encourages the gathering of all forms of knowledge to be used for fuller understandings. Although this inquiry is viewing rhythm and its organising qualities, the study's boundary has been left somewhat fluid to allow for any alternate emerging focus.

This section begins by answering the original inquiry questions for each participant K and J individually, followed by personal reflections on what has been gained through the process of this inquiry. It may be useful first to revisit the four study questions.

1) What kinds of 'Rhythmic Events' are identified in a sequence of sessions with two clients?

2) What patterns emerge from the identified events?

3) Can interpretations be made from these patterns of rhythmic interactions, between the MTS and client, on the participant's manner of communicating?

4) What, if any, therapeutic implications can be deduced from these interpretations?

5.1 Participant K

The first point for discussion, from the summative findings, was K displaying 'random beating' in an unexpectedly small number of REs, considering her background of high levels of 'random beating'. This may have been due to the rather structured approach by the MTS. Another possibility could have been that K was enjoying the ordered feel of a regular pulse within her body and discovered how to practice it and vary it. The MTS took

regular supervision during the year which meant that K's MT goals changed to give K plenty of opportunity to freely express through music and movement.

Retrospectively, it is possible the research process may have unintentionally biased the clinical work, as the goals were reasonably prescribed. There is research and anecdotal writing on various approaches within the music therapy process. For example recent research by Rickson (2006), gives a comparison between instructional and improvisational music therapy on levels of impulsivity when working with teenage boys with Attention Deficit Hyperactivity Disorder (ADHD). While no firm conclusions could be made, indications reveal that restless behaviours and impulsivity may have been reduced in the classroom by the instructional approach. Nevertheless, as Darnley-Smith (2002) notes, some situations require flexible approaches.

A second finding was that a pulse appeared to be forming by two means. In one third of REs it was observed to be developing from within K at the piano, sometimes synchronised to self-chosen words and always accompanied by gross motor movements. An example of this would be K playing a bass cluster with one hand, holding her arms spread as if flying, then rocking to play a cluster in the treble or high part of the piano. This formed a whole-body seesaw, a slow rocking with which she could attach a two-syllable word synchronously or continue the rocking motion for extended beating.

Dalcroze (1967) claims this is what is needed as " the whole body needs training to feel the rhythm" (Dalcroze, 1967, p. 183). In K's seesaw-like example from REs, feeling of the inner pulse was initiated by her to her own words in a song writing segment. She started to include other parts of her body, particularly alternating her elbows to form a quicker pulse than the seesaw whole body movement. A faster tempo again was observed by K alternating hand clusters. The two slower examples, seesawing and playing by alternating elbows were particularly useful to K for synchronising with speech at her self-chosen slower tempo. These three pulse tempos, physically defined and felt from within her body, gave K a range of slow, medium and fast speeds she used in communicative interchanges in the improvisation of session six.

Another means by which a regular pulse order seemed to be forming was in 2/3rds of the REs where the temporal feel and organisation for the pulse was facilitated by the MTS 'cueing' K by a variety of ways. Cueing, as a secure but flexible temporal structure

has been shown to be particularly important for people where self organisation is immature and poorly formed (Trevarthen, 1996). The variety of cueing relied on; a flexibility of the pulse in an extended anacrusis, by the musical form, by using familiar structures and by visual communicative means. Celentano (2000) suggests flexibility is the most important aspect of rhythm while Robarts (1996) considers the musical 'anacrusis' "can provide an invaluable (and infinitely variable) aid to regulation and a means to facilitate trust and emotional engagement in shared play" (Robarts, 1996, p.156).

A notated example, where K played the blues with cueing from the MTS by visual, aural, and musical means is shown in Figure 10, p. 67. A variety of cueing appeared to be integratively entwined in this example. These included visual and aural cueing when breathing together formed a natural anacrusis (exaggerated air intake), body language cueing with K, by temporal pauses and by the musical order or structure of the 12 bar blues.

Rhythmic figures and patterns formed a third kind of event noted in the findings. These were found to be very simple subdivisions of such a basic kind as to be almost at one with the pulse or rhythmic ground. Some music therapists note the first recognisable rhythms to appear are noted as; quick, quick, long (Alvin, 1978; Orff, G. 1984) or long, long, quick, quick, long (Orff, G. 1984). The first of these (quick, quick, long) was often used by K. While most of K's rhythmic figures contained little stresses, there were times a potential was noted by the MTS. By playing in various ways and across different timbres, for example keyboard to the wood (the piano case), it gave a pattern in which stress naturally occurred. Other ways stresses formed were during synchronised playing with the MTS, or by longer sounds of clusters on the piano giving the sense of a stressed sound as the use of the clusters rhythmically altered in some way. The importance of being able to play and say stresses, gives rise to patterns which was mostly absent in both K's playing and speech. Pre-rhythmic style playing is considered to be freely playing with no stresses or feel of a pulse (Orff, G., 1984).

The fourth type of REs was considered 'statements'. These were difficult to define or establish a criteria for, but they were when K was observed to be playing strongly (usually a single or double cluster) in a manner that indicated she wanted to change or control the activity. The 'statements' were noted primarily in K's REs from her extended piano improvisation. If words could be attached to these statements I would suggest it

sounded like 'no', 'get lost', 'take that', 'sit down' or 'stop'. An example of these statements is in K's REs, Figure 9, bar 9, p. 66. It appears to be used by K as a strong, expressive communicative 'statement' to shape the improvisation.

A fifth and last type of RE was identified as a rhythmic vocabulary or 'motifs' built up by K. The piano improvisation was built almost entirely around these simple, one to three pulsed, rhythmic figures. They are a mix of the simple rhythmic figures for the REs discussed and 'statements'. The word 'motifs' was used as these rhythmic figures were reoccurring from week to week as a vocabulary to use independently from their original location in the song writing segment. Ansdell (1995) writes of such rhythms starting to form some kind of identity making them recognisable and able to be repeated. K was not developing the rhythmic figures so much as inventing an incredible number of ways of playing these 'motifs' by changing speed, timbre, dynamic, patterns or manner of playing.

Certain patterns were identified through the use of these 'motifs' in the piano 1improvisation. K appeared to be using these 'motifs' without words but they continued to match her speech in length of syllables, complexity and lack of stresses. This was referred to by Alvin (1978) who believed musical understandings might stay at the same level as the understanding of the organisation of spoken language. Considering verbal apraxia is a disorder of organisation of the spoken language, the musical understandings do appear at the same level of organisation. A question to consider would be whether, if K's musical understandings expanded, would this have a flow-on effect to her speech?

The most striking aspect of the application of these 'motifs' in improvisation was K's highly inventive ways of playing with her small vocabulary. If one equate these 'motifs' to K's speech, it was realised she needs to be inventive in order to make herself understood with very little speech. In the rhythmic improvisation she had so many available choices of variation as the apparatus (piano sound) was all working and she felt her 'motifs' in movement. Many authors refer to the importance in learning through repetition and imitation (Stern, 1977; Sacks, 1998; Wigram, 2004).

Ks inventiveness gave her the leadership role, which she appeared to enjoy. The findings, using Bruscia's Autonomy Profile (1987) identified a strong leadership tendency from K's REs in the improvisation. Once more I reflected on her life in a verbal world. She seeks communication naturally, shown by her continual attempts to verbalise when people

do not understand. For example she is learning to 'text' on a cellphone, answers the phone and writes if she cannot make herself understood. Demonstrating to the world she wants to communicate, K is continually in that leadership role of trying to make people follow what she is saying. The findings did note she had some flexibility to encompass other roles. Synchronised partnership is not something K would have experienced previously due to her unformed inner pulse and poorly organised sense of timing. Perhaps it felt very uncomfortable for her. She communicated clearly, using rhythm and sound, when she wanted to be free of this connection.

More questions than answers came out of the inventiveness shown by K. Was she trying to have every interchange different? Perhaps she thought it was a kind of game. Was K not repeating or imitating me because she had her own inventive agenda or was she not able to repeat at that time or speed perhaps due to her Apraxia? Another possibility was that K, who has to put a lot of effort into the organisation for communicating, was enjoying inventing without too much concern for replying as expected. The findings suggest that of the MTS's 11 (of 90) rhythmic offerings, that were different in some way from hers, she imitated three. Some of the other REs by K, that could have been classified as imitation, may have been categorised differently. For example as pulsed playing, but it was something to wonder about and inquire further.

Finally examining the variety and choice of tempo used by K. When activities included speech with rhythm synchronised, she chose a slow tempo. In the piano improvisation, where speech was not involved, K enjoyed an extremely fluid and fast pace of interchanges, often accelerated by her. Playing and interchange speeds were controlled by K using pauses and tempo changes. The speed of the interchanges, within the improvisation, could be compared with the split-second timing of mother and infant interchanges noted by Beebe, (1982, cited in Robarts, 1996). How it felt for K, being able to play the 'motifs' at her chosen speed without any challenges to production, was questioned. Playing was about four times the speed of her chosen tempo when words were attached to the same 'motifs' (MM 42 per syllable increased to approximately 162 for interchanges without speech). K's productive speech is slow and halting where she needs to attempt words many times for people to understand what she is trying to say. But in the piano improvisation the speed was her choice.

In summary the principle findings from K's REs appeared to be her developing sense of an inner pulse and an ordered but simple rhythmic vocabulary of one to three pulses that she varied inventively for use in repetition and imitation. K used the rhythmic vocabulary as expressive communication in inter-musical events. These rhythmic figures match her speech length. Her ability to repeat or imitate rhythms consistently is in question. The speed of her use of her rhythmic vocabulary, minus speech was very fast and temporally fluid. Apart from the rhythmic 'motifs', a vocal glissando 'motif' was appearing that has the potential in music therapy for a singing base. As Nordoff and Robbins reported of a client, "she entered the world of melody through the gateway of rhythm" (Nordoff and Robbins, 1985, p. 31). These REs, experienced within a relationship, identified K as a strong leader but flexible in her role, with a seemingly limited tolerance to synchronised connecting through an imposed pulse.

What emerged is that K has a huge drive and motivation to communicate and this inquiry has unexpectedly identified K has developed her own foundation for language, an alternate productive language, she could use expressively in communication, for improvising rhythmically at her preferred fast tempo.

5.2 Participant J

A well-developed sense of the pulse was identified in J's REs. His connecting with the external musical pulse was happening a great deal more than was initially realised by the MTS as J beat or played using minute movements that were not easily observed. The findings show J has a strong sense of internal, temporal organisation and appears to enjoy linking into an external pulse. Autism is not often diagnosed until a child is about 18 months old, however it is in early infancy that "communication is mediated by sympathetic negotiation of rhythmic, vocal, facial and gestural signals" (Trevarthen, 2000, p 41). The brain is continually developing at this time and Trevarthen's paper details stages of this and its effect on the course of autism in a person. It is a fascinating area but one which is too expansive to develop here. Suffice to acknowledge this period of development in early infancy and its possible impacts on temporal order for J.

A second type of noted RE was when J regularly and intermittently disconnected from an external pulse. This 'disconnecting' would be difficult to quantify without microanalysis and is beyond the scope of the study. Speaking as both the clinician and researcher, there was rarely an event where this did not happen to a greater or lesser extent. The REs for this study were categorised as one event per category and often grouped by the dominant feature of the event. This might have been a rhythmic figure for example as opposed to J's intermittent disconnecting from the pulse. What can be identified is that 'disconnecting' from the pulse was noticeably dominant over the sessions generally but happened less in the bongo improvisation.

While the above finding, that 'disconnecting' from the pulse happened less frequently during J's bongo improvisation, may seem an indicator of the worth of an improvisational approach, several issues need considering. Firstly the pacing of the session had evolved over the year, using familiar and/or calm, easily recognised, structured music early in the session. This was to calm J, as the transition from the classroom to the music therapy room appeared stressful for him. The MTS aimed at providing a secure musical environment with J so that he felt comfortable in his choice to connect with the external pulse. As J relaxed, an extemporised 'blues' or other favoured pre-composed styles (e.g. Celtic) were often introduced to motivate and encourage participation while still being predictable. The free improvising experience was often placed near the end of the session and because of its inherent unpredictability, was only used if the MTS considered J was settled enough on that day,. Contextual consideration is therefore recommended before generalising the finding that disconnecting from a pulse was not prevalent in improvising with J. It could cautiously be suggested however that J was indicating he found improvising more engaging than structured music making.

Nevertheless, a variety of improvising styles along Darnley-Smith's continuum (2002) or techniques to provide structure within improvisations, well documented by Wigram (2002), could keep J more secure in his music making while facilitating attending. Robarts (1996) considers improvisational music therapy can help the person with autism in a number of ways. For example by "entraining responses, giving a sense of temporal flow to develop a cohesive sense of self, expanding his/her capacities in social interactions, helping assimilation of change and variation, while offering creative strategies" (Robarts, 1996, p.141). Improvisational MT was the focus of Edgerton's (1994) controlled research,

reporting it can positively affect people who have autism in two ways. These were noted as increasing communicative behaviours and generalisation of skills transferred from one setting to another. Whether improvised or more structured forms of music are used in MT, "arousal affect and attention are learned within the rhythm of a relationship" Aldridge (1996, p 248).

Thirdly, J uses pulse subdivisions, dividing equally and into dotted rhythms. Additionally J's REs demonstrate what Alvin (1978) refers to as higher musical understandings of meter and harmonic structure. These are shown in the notated extract in Figure 6, p.64. The pulse subdivisions are shown by J beating or hand dancing in the air. Furthermore he uses a definite, fully bent wrist movement on the first of the bar. This indicates meter understanding. He puts down his whole arm as the 12 bars of blues finishes, suggesting J has a higher level of understanding about the organisation of the music. Alvin (1978) believes understanding the organisation of the spoken language stays on the same level as a person's understanding of the organisation of music. If this is so, J's understanding of the organisation of receptive language may be similar to that displayed at a higher level for music.

A fourth and important point is that J did communicate rhythmically in REs within the structure of 'call and response' provided by the bongo improvisation. He initiated 'calls' and/or statements' and responses. Such dialogue is a joint activity and as such both people must be motivated and committed to its continuing in an improvisation (Aldridge, 1996). This productive dialogue was very tentative but evident in notated transcripts in Figure 4, p. 62 and Figure 5, p.63. These provide an example of a productive language, in partnership, inter-musically between the MTS and J. It is a form of overt communication, perhaps outside any J has previously experienced, one he freely entered into and was happy to remain in as the MTS concluded the improvisation. A quote here might illustrate the importance of such communication from someone who has autism, "...each of us who learns to talk to you, each of us who manages to function at all in your society, each of us who manages to reach out and make a connection with you, is operating in alien territory, making contact with alien beings. We spend our entire lives doing this and then you tell us that we can't relate" (Sinclair, 1993, cited in Wigram's unpub. presentation notes, 2004)

The fifth type of identified Rhythmic Event occurred when J displayed hugely accelerated beating. This type of event originally provided the research rationale. The same kind of RE was heard on the bass drum in the very first session with J (February 2005) and facilitated him speaking 'yes' (very rare occurrence) and consequently my inquiry as to why this happens to him, and why it motivated him to talk. Robarts (1996) suggests that this type of rare connecting is not uncommon in the first MT session with a person who has autism but following this they may retreat for some time. What I was not aware of, and it was an unexpected finding from analysis, was that these accelerated, seemingly uncontrollable beatings become 'flapping' in the air making them each part of the same response. Nordoff and Robbins (1985) imply this accelerated rhythm comes from becoming over excited and overwhelmed and that the loss of control is not out of choice but organically based. This may be demonstrated by a notated excerpt, from the bongo improvisation in Figure 4, p. 62. J was communicating after these events that he did want to stay in communication musically by issuing the next sound after the pause of about nine seconds (see Figure 4). J appeared to need space at this time, rather than enticing into interaction. Warwick comments on the importance of this in music therapy, "to respect the child's silences and to give space, both physical and emotional in which the relationship should develop" (1995, p. 216). The moment after this space seemed very important as does the start of improvising, "at first the music therapist sensitively supports and fosters the tiniest impulses, in order to find initial contact" (Robarts, 1996, p 146).

It has so far been noted in these highly accelerated responses that J's beating appears out of control, are a form of 'flapping', occur more frequently in improvisational segments of music therapy, and there is a strong possibility it is threatening continually. Literature asserts that the stereotypical patterns of behaviour are the way a person with autism regulates stimuli from the outside world which, while being exciting and interesting, can be overwhelming and confusing (Robarts, 1996). The findings identified the context and/or triggers for the accelerated beating as varied, but that an emotional disturbance was common to all examples. It was originally queried as to whether these types of accelerated rhythmic responses were due to over-stimulation or over-excitation of the senses, particularly as the bass drum has highly stimulative aural qualities. However the findings suggest these hugely accelerated responses may not be as one-dimensional as expected. The example with the bass drum could have been by over-excitation of the senses or anxiety by

direct questioning of J by the MTS as to whether he wanted to continue playing. Other REs of this type suggest an emotional response, hierarchically organised. For example mild annoyance at the T/A and MTS encouraging J not to put claves in his eye engendered a slight accelerando; initiating rhythmic figures, imitating MTS rhythmic figures, and hearing his rhythmic offerings replied to, led to temporary withdrawal from events. Many other factors may be involved here and it is an area that would invite further study. What was established from the findings was that this type of RE, hugely accelerated beating/playing, occurred when:

- J was stopped from doing what he wanted to do – possible considerations: annoyance, pleased with himself, other sensory stimulation occurred, did not want to do the activity.
- J was questioned directly – possibly anxious as to how to reply or strongly did or did not want to carry on the activity.
- His communication in the improvisations (by imitation) was heard and understood – possible reasons: excitement or anxiety over communicating in this manner was considered, excitement or anxiety by his being in control/initiating the communication.
- Initiated rhythmic communication in improvisation – possible reason: pleased with his contribution or anxious about his contribution was considered
- Shared rhythmic communication – possibly anxious or pleased by this form of communication.

The way J controls these REs, accelerated beating or 'flapping', and whether he re-entered the activity or not, will be discussed. Accelerated beating or 'flapping' in REs were primarily self-controlled by J, a form of self-regulating. This was done in a number of ways with the most common being holding his RH tightly with his LH, in much the same manner as people with Parkinson's disease or anyone who cannot control their hands shaking do. This is often exacerbated by emotional stress. He also held his hand spread wide over the source of sound to stop action, 'picked' at an object, stared intensely at the instrument or beater as if concentrating hard and freezing his muscles so they could not move. It appears vital to give people with autism this 'time out' to recover from stimulation that may be overwhelming (Robarts, 1996).

Having discussed inter-musically what was occurring within REs, the role or multiple roles J displayed in the relationship with the MTS will be examined. Although J appeared dependent on the MTS for stimuli, within the REs he became flexible however, moving between follower, partner and leader. J could be considered to be controlling the activities. This was as a leader demonstrating what he did not want to do by a huge array of body language and also facial encouragement as feedback to the MTS. This form of communication was shown in the session data, extending to non-participation on days when J was not feeling well or disturbed in some way, to active participation at other times.

The main points of the findings and discussion for participant J will now be summarised. He uses his well-developed sense of a pulse to connect temporally to the music around him showing this often in a minimalist or unusual manner as if hiding it. He regularly and intermittently disconnects from this pulse. Non-verbal communication occurs when the stimulus varies in some manner. This may be for example by a change temporally, by tone, harmony, adding melody, personalising a song or by more active participation such as occurs within inter-musical improvisations. His inter-musical communication involves imitation and repetition of simple rhythmic figures played in inventive manners with various parts of his very expressive and flexible hands. J uses behaviour, body language and/or inter-musical production to communicate. He controls his internal and external world by using a large range of behaviours and body language. Within the inter-musical experience of the improvisation (bongo) J displays a different, more active involvement in communication. Here his REs show he is using the rhythms more as an overt, reciprocal productive, non-verbal language

From tentative beginnings of REs in the improvisation there emerges possibilities for J to engage in a therapeutic partnership, within which communication, learning and enjoyment can be experienced more in the future. He has shown a willingness for his stereotypical behaviour of 'flapping' to be used positively to connect to the external pulse and communicate for example when he couldn't keep up with my pulse in the blues (Figure 6, p. 64, bars 9-10). J's hand beating or air dancing (Figure 6, p. 64) shows when he is disengaging from the activity, his enjoyment of it and a way of acknowledging variation within the music. Potentially J's hand dancing could be considered a communication channel, a form of productive gestural language. Through the REs findings two communication possibilities have emerged noted above, facilitated by MT but self-

motivated by J. A third possibility was beginning to emerge in REs through J's vocalisations. These events occurred at the height of some REs. J was beginning to show a willingness to stay vocalising in pitch with the MTS. This possibly made a richer, inter-musical experience for him. Vocalisations, made by a boy who has autism, were discussed in a case study by Robarts (1996). In this study the increased intentional use of vocalisations, range and communicative aspects displayed a willingness to sustain and share play in a fun way.

Although J did display disconnecting and/or avoidance behaviours, there emerged signs of a willingness to communicate using music as the therapeutic tool. Music appears motivational for J and three possible channels of communication appear open through gestural, instrumental improvising and through vocal means. "Music is not a luxury but a necessity to such patients and can (if it works, and for a while) provide what their brain can no longer supply" Sacks (1998, p.3). In this quote from Sacks he identified need in people and how the power of music can organise and animate people with Parkinsonism. It could however arguably be applied to communication needs through autism. Music possibly could provide a bridge for J that is not considered a luxury but vital reciprocal communication. Trevarthen (2000) considers skill-based education, for people with autism, is not sufficient to develop their potential as unique humans.

This discussion has viewed findings (from REs) for both participants in relation to the inquiry questions. While inquiring into rhythm's organisational qualities, the emerging focus has been of communication inter-musically for both participants. This is not unexpected as both participants have communication challenges with productive language. For J these are combined with challenges with social interaction. Nevertheless it was an unexpected finding that J was motivated to use the musical language to communicate. Contrarily it was not an unexpected finding that K appeared to embrace the possibility of communicating musically, at her preferred faster tempo in a non-verbal way, as she had shown a desire to communicate generally.

"Musical activity is based upon what the child can do in musical play, but the potential of what the child can do further is based upon what the child and therapist are capable of together" (Aldridge, 1996, p 247).

5.3 Personal Reflections

From a personal, clinical perspective I am discovering the importance of 'wondering', as sometimes what I considered was a reality was not necessarily so and therefore new understanding for me personally may not be the reality either. This capacity to 'wonder' is the subject of a chapter by Hoskyns (2002) which has resonance for me when she writes "perhaps the endpoint for therapists is in being able tolerate ambiguity, to accept complex layers" (Hoskyns, 2002, p. 175).

Secondly the research has made me consider more how I practice music therapy, in content and application but particularly from the perspective of improvisation, more structured or pre-composed music. Is this on a continuum as Darnley-Smith suggests and what impact does it have on the music therapy process? If I had used improvisation more with K would she have felt the temporal order of music for herself sooner or more intensely and how does this evolve? I questioned whether she would be happier enjoying music without a pulse and whether this entraining of the pulse was being useful for her speech patterning, stress and/or connecting with others temporally. The question of how speech governs our communication was reflected on and I became in awe of K's body language and reading of others. I learnt to admire her spirit to live so confidently in a verbal world having little speech.

Lastly I have come to appreciate the multifaceted nature of rhythm, its temporal qualities, its flexibility and order, its anticipatory aspect; developmental position and that movement/gestures are rhythm in action. J's hand 'dancing' in the air showed me the flexibility of the pulse and how the voice can sustain that. He drew it for me, showed me his way of being. I still have much to learn and wonder about rhythm, pulse and particularly its acquisition, fluidity and feeling that crosses over into the emotional experiences. Rhythm's ability to change moods has not been the focus of this inquiry but holds important implications for MT and as such would be worthwhile for further research.

Summarising now, from a personal perspective, my experiences while working with participant J. The value of videoing sessions when working with people with autism was noted. Although I intended careful attention to the client's behaviour in sessions, watchful video viewing, detailed analysis and reflection helped immensely in gaining some insight and understanding of J's world. After taking supervision on this, as J appeared sensitive to

the camera, I set it up regularly, a form of de-sensitisation, taking care to always let J know if the camera was on. I hoped to have gained some insight into J's hugely accelerated beating, his world and the way he controls and enjoys it. I came to realise how much J understands and enjoys music and sharing this connection. The 'quickening' in J that occurred during musical events was a celebration as was his communication with me rhythmically. I have learnt that it is difficult to understand the seemingly complex world of people with autism but not as difficult perhaps as them trying to live in our world. The areas for further understanding are multiple and include:

- Understanding more about methods and techniques to stay connected with the client with autism
- Links between musical intelligence and cognitive intelligence
- Stereotypical behaviour and ways of connecting with these for communication
- Contextual aspects of tempo of stereotypical behaviour in MT
- Personal tempos
- Rhythm as an assessment tool

6 Conclusion

The two participants helping in this inquiry are looking for order in their worlds, an order for them that is constantly changing and challenged by the disorders of autism and verbal apraxia. Naturalistic inquiry, the methodology for this research, allows for each section of the study to creatively evolve including the emergence of the inquiry focus. The study evolved into action research.

The study material collection took place over an eight-week period following ethical approval although the therapeutic relationship was established over the seven months prior to this period. Through clinical work in an educational setting the music therapy student explored music making with two teenagers who showed diverse responses to rhythmic challenges. These diverse rhythmic responses included seemingly chaotic beating from Participant K, who has verbal apraxia while Participant J, who has autism, responded by connecting sporadically to an external pulse. J's rhythmic pulse often accelerated excessively resulting in his withdrawal from the activity.

Qualitative research was used to examine what 'Rhythmic Events' could be identified in a series of MT sessions, what patterns emerged from these events, what interpretations might be made from these patterns of rhythmic interactions and was there any therapeutic significance deduced from these findings? It was found that participant K was starting to feel a slow pulse for herself by using her whole body in a rocking movement at the piano. Out of these Rhythmic Events emerged 'motifs' or reoccurring rhythmic patterns. Initially they emerged to words selected by K in song writing segments of the MT sessions. These were of a simple nature, one to three notes generally, matching her speech syllable length. Once freed from the speech she could use these 'motifs' in an improvisation at a fast speed in communicative interchanges finding her role here as a confident, inventive leader after which I wrote, "K was a fluent partner". She was not so comfortable in synchronisation or imitating rhythmically. K appeared to enjoy being cued temporally by the MTS to play in time, " we breathed a lot together…we laughed together…we played together…". One of her teacher's main concerns was that K would become frustrated by the large gap between her receptive and productive language. Through K's teenage years the forms of expression that MT can provide could be considered vital communicative experiences rather than luxuries. Specifically the REs in

MT provided for and demonstrated K as expressive at her favoured tempo, on her chosen instrument in communicative improvisations. There was potential shown to extend these inter-musical experiences to vocal play.

Through the REs of this study it was discovered that J was very happy to connect to a beat and in improvisation dared to initiate and imitate. His pulse was well formed but continually under threat from intermittent disconnecting by drifting attendance and disconnecting by perhaps becoming too involved. Either way, connecting appears disturbing. Findings showed that J's 'flapping' in the air was one in the same as his accelerated beating and that it continually threatened his active participation in MT. J's 'hand dancing' or beating in the air was emerging as connecting into the pulse around him. He often showed, by a variety of body language, his awareness of changes made to this stimulus. His participation in sessions was found to be dependent on his health, and J demonstrated he was particularly sensitive to contextual changes. To connect to the external pulse J used minute movements and he displayed musical understandings at a high level. He was a communicative partner in the REs and as such it was celebrated. J's vocalisations were also showing signs of changing and matching into the sounds around him. Having three potential channels open (hand beating, improvising and vocalising) to communicate and practice these interchanges in a non-verbal way makes MT important for J in the future. "The smallest musical achievement of an autistic child is best measured in terms of human satisfaction rather than musical results" (Alvin, 1978 p.118). J celebrated his rhythmic communication in the improvisations by smiling, attending, eye contact and self- regulating.

The emerging focus of this inquiry has been the two participants use of rhythm to communicate and provide an alternate productive, expressive language. "The whole body needs training to feel rhythm and in feeling music, including the rhythmic mood evoked, involves the emotional, affectual side of a person simultaneously" (Dalcroze, 1967, p. 163). Future research areas arising from this inquiry are numerous and noted in the discussion. New personal meanings have emerged from the research.

There are many sides to my awakenings. As a clinician I have been awakened to the potential of improvisation for non-verbal expression and to be thankful for music as a means of communicating this expressing. Personally I have come to admire hugely the non-

verbal communication shown by the two participants. As a musician I have been awakened to the many understandings of rhythm, providing both order and flexibility. Finally, I have come

to wonder more.

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Appendix A - DSM-IV-TR

American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders* (4th Ed.). Washington: American Psychiatric Association. 2000.

Diagnostic criteria for 299~OO Autistic Disorder

A. A total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):

(1) qualitative impairment in social interaction, as manifested by at least two of the following:

(a) marked impairment in the use of multiple non-verbal behaviours such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction

(b) failure to develop peer relationships appropriate to developmental level

(c) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)

(d) lack of social or emotional reciprocity

(2) qualitative impairments in communication as manifested by at least one of the following:

(a) delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)

(b) in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others

(c) stereotyped and repetitive use of language or idiosyncratic language

(d) lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level

(3) restricted repetitive and stereotyped patterns of behaviour, interests, and activities, as manifested by at least one of the following:

(a) encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus

(b) apparently inflexible adherence to specific, non-functional routines or rituals

(c) stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)

(d) persistent preoccupation with parts of objects

B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder.

Appendix B - Speech and Language Acquisition

Reflexive crying and sounds in the early few months of life become the first communication. This may be communication about pain, hunger or rage (van Riper & Emerick, 1984).

[parents begin to distinguish between the different sounds, by intonation and rhythmic patterns (van Riper & Emerick, 1984)]

Cooing and laughing are added to the sound repertoire between 2-4 months, usually occurring when relieved of some distress; for example after feeding or nappy changing. Van Riper & Emerick, 1984)

[*expanding the pre-verbal communication repertoire]*

Vocal play occurs as the baby physically develops (4-6 months) and realises they are making the sounds and can control them. Prolonged vowel-like sound (vocoids) and consonant-like sounds (contoids) are used, repeated and varied also by dynamics, pitch (van Riper & Emerick, 1984). The sounds are sometimes consciously used to hold attention; body language appears to be understood and withdrawal from interacting occurs at will. The latter for example is achieved by turning the head away, crying, or yawning (van Riper & Emerick, 1984)

[evolving conscious and functional use of rhythmic patterns of sound – temporally based]

Babbling explores articulated sounds (6 months onwards) where sounds are formed into chains, over one breath or exhalation and mimic conversational speech closely. There are two types of babbling content that occur and both are considered 'open syllables'

(contoid followed by vocoid) ; (1) canonical or reduplicated, as in //dadadadada/; and (2) variegated or non-duplicated as in /didogagogi/ (Bernstien & Tiegerman-Farber, 2002). Babbling may be accompanied by gestures or crying and becomes more functionally communicative when combined with looking at an object. Memory is normally acquired at this babbling stage (Wortham, 2002 in Coulson, 2003).

[*both 'canonical' and 'variegated' sound forms use rhythms with accompanying, synchronised bodily movements including those for production, and are used and ceased consciously. These sound patterns are both regularly and randomly uttered, are over one breath phrase, combined with the sense of sight when functionally used. Mimetic rhythmic use and temporal sound exploration noted.]*

Jargon at 10 months begins to resemble speech patterns as the syllabic combinations are more varied and prosody closer to the speaking around them. Use of speech and intent is more obvious for conversational use as, by experimenting, the infant's speech consistently contains more defined intonation patterns.

[Temporal aspects of duration and articulation are being honed with pattern recognition practised. Function of speech and language as communication evaluated contextually]

First words (12 months onwards) are usually duplicative (/dada) rather than monosyllabic (/dad/) and directed towards significant people or objects in their experiences. (Bernstein & Tiegerman-Faber, 2002). Receptive language is being absorbed and vocalisations now become speech.

[*Symbolic language of speech now begins to overlap with the pre-verbal gestural, bodily language. Rhythms remain constant to both the languages but in the more complex symbolic language, many more systems are required to work together while simultaneously connecting externally]*

Appendix *C* - Melodic Intonation Therapy (MIT)

Source: Sparks & Deck (1994) sourced in Coulson (2003): a summary of MIT.

A Summary of Melodic Intonation Therapy Protocol

Source: Sparks & Deck, (1994)

Level 1

1. The clinician sits opposite so that his participation is clearly visible to the patient. The left hand is held. The clinician hums a melody twice while hand-tapping the rhythm-tempo-stress pattern with the aphasic. Humming is preferred to avoid any association with phonemes.

2. The clinician signals the aphasic to join her in unison humming of the melody along with the hand-tapping. When the clinician feels the aphasic is ready for solo effort, she fades her vocal participation but continues hand-clapping with the aphasic When the aphasic has completed the unaccompanied repetition, success is reinforced by the word "good" and proceeds to the next melody pattern. Moving to Level 2 occurs as soon as the aphasic is comfortable in the set of intoning, hand-tapping and complying with the hand-signals. Level 1 may take 15 minutes or two to three sessions.

Level 2

The aphasic who succeeds in Level 2 has acquired the skill of repeating intoned sentences immediately after hearing the model and then in response to a question. The question acts as a masking intrusion and also serves to initiate the process of re-coding the stimulus for responsive speech. Poor articulation may be revealed during this stage and is not addressed. Greater priority is given to increasing linguistic skill.

1. The clinician hums the melody-tempo-stress intonation pattern, then repeats it with the sentence added. He pauses briefly and then repeats it. He signals the aphasic to join in union repetition of the intoned sentence. If unsuccessful the clinician waits for several seconds to produce decay of the strength of the stimulus and then proceeds to the next sentence.

2. Unison intoning with fade; hand-tapping is maintained. If successful, the next sentence is attempted.

3. The clinician presents the intoned sentence with hand-tapping. The aphasic repeats this unaccompanied except for hand-tapping. If the aphasic has difficulty initiating the repetition, a phonemic cue is given for the first phoneme of the sentence. If successful after one cueing the clinician proceeds to the next sentence.

4. The clinician intones "What did you say?" immediately after successful completion of (3). He signals the aphasic to repeat the intoned sentence. Cueing along with hand-tapping is offered once. Approximation of the sentences is acceptable. The aphasic is reinforced if he successfully completes the four steps for the sentence.

Level 3

This level introduces more a difficult response involving some retrieval and attempts an encoded response to specific questions

1. the intoned sentence is introduced with hand-tapping and the aphasic is signaled to join in. The clinician fades.

2. The clinician intones the sentence once with hand-tapping and the aphasic's response is delayed by one or two seconds, imposed via hand signals from the clinician. If unsuccessful, there is an immediate backup to (1) and retrial of (2).

3. The clinician intones a question requiring retrieval of the intoned phrase. Instead of "What did you say?" the question could be "What kind of pie?"(this answer has not been prepared). This is done without hand-tapping. If unsuccessful, backup to (2) and immediate retrial.

Level 4

At the successful completion of this level the aphasic has maintained the skills acquired earlier in the programme and has carried them over to normal speech prosody along with an ongoing recovery of ability to encode and emit at least basic verbal communication

1. The clinician intones the sentence with hand-tapping. He pauses briefly and presents the sentence twice in *Sprechgesang* accompanied by hand-tapping. The aphasic joins in with *Sprechgesang* accompanied by hand-tapping. Fading occurs but returns if the aphasic is experiencing difficulty adapting the new, less melodic technique.

2. *Sprechgesang* with hand-tapping with delayed response. If unsuccessful, immediate backup to (1) and retrial of (2).

3. Hand-tapping is discontinued for the remainder of this level. The clinician presents the sentence twice but now in normal speech prosody. The aphasic's response is delayed and may be increased as the aphasic develops proficiency. If unsuccessful, immediate back-up to (2) and retrial of (3).

4. Same as in step (3) of level 3. The clinician asks questions about the utterance but the number of questions may be increased. He then asks questions which are more associative in nature.

Appendix D - Naturalistic Inquiry

Notes on characteristics of this methodology from:

Aigen, K. (2005). Naturalistic Inquiry. In B. L. Wheeler (Ed.). *Music Therapy Research* (2ndEd.) pp. 352-364). Gilsum: Barcelona.

Naturalistic inquiry

- Natural setting; Research carried out in the settings that provide the framework in which the findings become understandable.
- The researcher is the primary gatherer of data gathering and analysis.
- Tacit knowledge: Because humans use all types of knowledge in day to day living, not just verbal language. In line with this the researcher may use all these forms of knowledge to gain a fuller understandings.
- Qualitative methods are preferred as they are deemed more suitable to "grasp complex realities… and better allow researchers to examine the idiosyncratic effects of their own stances upon the research process" Lincoln and Guba (1985, cited in Aigen, p. 355).
- Purposive sample – not confined by requirements of random sampling. Researchers can select from a wide range of people and hence more likely to find suitable individuals who may hold answers to their investigations and interests.
- Inductive data analysis: because knowledge is considered a human construction (not a single reality) researchers are able to use interpretative forms of data analysis.
- Researchers are investigating and forming flexible or working hypothesis.
- Grounded theory – naturalistic inquiry is similar to grounded theory research but does not have the creation of a theory as its goal. It does however value the creation of theory based on the data.

- Design emerges- the findings and structure of a research study will unfold naturally. This comes about due to the unique interaction between the researcher and the setting. As the knowledge is gained the researcher should actively use it to guide the design as it emerges.
- Negotiated outcomes – The researcher is not the sole or even primary authority but seeks to reconstruct with the participants.
- Case study reporting - favoured for its suitability for describing various realities and communicating, in a user-friendly way, the researchers' interactions within the study.
- Idiographical interpretation- research findings are within a specific forum of the investigation and not meant as general laws. There is a caution here over generalisation of certain aspects of findings.
- Focus-determined boundaries – just as it is not possible to select the specific theory, methodology steps, it is also encouraged to let the focus of the study be fluid, as it emerges out of the research activity.
- The focus was initially on rhythm but may be on communication as the research unfolds. The research findings will illuminate this
- Special criteria for trustworthiness: through trustworthiness, a naturalistic inquirer defines the criteria for evaluating their studies. Three aspects of the research strengthen the validity or credibility of the work. (Aigen, cited in Wheeler, 2005). These are as prolonged engagement alongside persistent observation and triangulation (Aigen, 2005, p. 359). The final criteria for trustworthiness was abandoned by Lincoln and Guba (1985) with divergent findings being considered equally valid as convergent ones. The current thinking on this criteria is that researchers actively seek to illuminate and enhance constructions within the minds of the participants as well as "stimulate and empower participants to action based on their enhanced constructions" (Aigen, cited in wheeler, 2005, p 360).

Appendix E - Case Study – K

An overview of six consecutive sessions in the study period

Session 1

(Videoed)

The session was distinctive in several ways. K began tapping in a random fashion but was more synchronised in this respect as the session progressed. This was particularly noticeable with the instrumental trio (formed between the co-client, K and MTS) where K was cued, visually (with body language) and musically by the MTS at the start of the song. She snapped a sound and vocally spoke synchronously with the MTS on several occasions with the pulse remaining with K as she beat the last few beats with her RH.

At the piano she challenged the MTS to an improvisation twice that was not extended by the MTS. The folder compiled of songs written by the group had been left at home today by mistake. From a few bars of a song played harmonically only on the piano by the MTS, K cued everyone in by the first words, 'Yum, yum…'

She particularly enjoyed and used her own technique for joining words or two syllables to sound and movement with hand clusters at the low end of the piano and then at the high end, alternating in a seesaw fashion. This was done on several occasions, mirrored by the MTS. This wide, slow, movement and low/high 'motif' was to become part of our improvising together. Whether she liked the low and high sounds, the seesaw, slow, sideways, ordered, rhythmical feel of this movement or wanted control over the whole piano (there were three of us seated at the instrument) it is not possible to say. It might have been all of the above. It did provide naturally and physically, a musical, very slow beat (approximately a pulse for MM=42) to fit her speech into, that was ordered and enabled the chant to be managed successfully by K.

The 'ball on drum' segment provided a vehicle for a great deal of repeated syllables at a fast tempo – e.g. borborborbor; backbackback; dododo; wewewe; nesnes. This had

been a goal discussed between the Speech and Language Therapist (SLT) and MTS. Several speech sounds were used that were fuller in inflexion than was usually noted with K. These were to the words 'high' and 'wow' - meaning the opposite (uncool).

Session 2

K brought her own CD to the session and together we set up a drum kit for her from several drums and a cymbal. She thoroughly enjoyed this activity shown by spirited playing. The music was rock band in style with a heavy drumbeat throughout. There was no evidence of a pulse synchronising with the CD music in K's playing. This gave the impression of joyous, chaotic beating.

Following this, the group played the percussive 'frogs' while the MTS sang a known song. K played with a rhythmic sense of the pulse, one beat every two bars as cued by the MTS and each slow beat of the last bar, for a simple eight-bar song. Once again the wide, slow 'low and high motif' was used with the rhythmically entrained speech while song writing.

In the 'ball on drum' segment, K added together four and five syllables when the bouncing allowed for slow entrainment with movement, sound and speech.

Session 3

This session was similar to session two for K. She brought a CD again and indicated she would like to dance. She had many moves that would have been learnt by watching others, such as crossing hands and set dance steps. Dancing indicated joyous but rhythmically chaotic movements. The session was different due to the other client's Mother coming in part way through. In the 'ball on drum' segment K once again had a five-syllable flow.

Session 4

Within the song writing segment of this music therapy session, K played clusters with her elbows for the first time. She was quite forceful on the piano and the MTS was not sure how much the piano should be used in this way. However it never appeared to the point of harming the instrument but often on that edge. By using her elbows she could once more gain that slow, controlled pulse, using all her body [This was also to become a feature of her improvisations]

The tuba was requested by K. Remembering that speech uses many of the same muscles and that her protruding teeth made certain sounds difficult if not impossible and how the lips needed exercising we set off. Not only was she successful in producing a sound – it was loud, low and very vibrant. It was also tiring for her as she is physically small and we did not pursue it for long. K did play four fluent pulses when engaged on the piano and a maximum of five syllables with speech synchronised to movement with the 'ball on drum'.

Session 5

This was a typical session with no particularly notable responses from K. She showed her usual sensitivity to and with the other client, being socially appropriate, patient, empathetic, accommodating, flexible and playful. K tended to take a leadership role physically and in choices for the session. She did not take over the other client's opportunity for choice, but expressed her ideas and feelings. Once more she played the tuba, familiarising herself with how she needed to organise herself for this physically and showed enjoyment at the resulting sound by laughing and smiling.

K spoke in syllables synchronised to single note rhythms and hand clusters of notes played at the piano bass as the words for songs were brainstormed. The subjects for the songs were around anything topical for her, such as a disco and the up-coming camp. Although five and six syllables were linked to movement in the 'ball on drum' segment, this number appeared right on the edge of what she could manage. When there were three syllables K was able to say these and bounce synchronously. The physical bouncing and

speech appeared to be separated out by K when she wanted to do five and six syllable/ words. For example, with one to three syllables K would attach speech to the bouncing, but with five to six syllables although the regular bouncing continued she appeared to be following the MTS internally as she chanted but K's speech dropped out at this point. In other words K bounced the ball for the syllables correctly but with the MTS saying the sounds for her. As the number of syllables increased from three to five or six, K became hesitant and looked to the MTS for cues. This caused a slight 'in-between' the beat hesitation in the rhythmic chanting.

In the final rap K was motivated to offer the group a pattern of two taps and two claps. This was managed while there were no words, except those connected to the actions, but as the revision of the session was chanted with the pattern, it was more difficult for K to sustain this pattern. She visually signed to remind the MTS's that she had played the Fijian drum. This showed her willingness to communicate, memory and connection with the session to the end.

Session 6

- Videoed
- Individual

The session was distinctive in that it was individual and as such, different activities were undertaken. Although this situation occurred once earlier in the year it was not a particularly productive session and the MTS decided the group still was the best way of working.

K chose the tuba to play first. With the MTS playing and singing the blues, K appeared to play on the cue of the rest. This was the first time we had played together in this organised way musically.

The session was notable for its improvisory content. There was a long segment on the piano of free improvisation that used multiple-timbres produced by her hand, fingers,

elbows, the piano wood, body and voice. It was centred around the communicational style of 'call and response' in a mirroring fashion between the MTS and K. The playing was distinctive for its speedy tempo. The use of many ideas or motifs built up over time were utilised, such as the 'seesaw movement' with arms spread wide to play the low and high sounds and the 'elbow sway' in a similar manner. The video did not tape the start of this improvisation, but from the researchers notes, K went to the piano and issued the usual three syllable rhythmic challenge with hand cluster. As it was individual MT for K today, and the MTS had taken supervision on separating out the functions of this segment (from her last clinical assessment), she answered K's rhythmical offering and the improvisation followed.

Two other aspects were notable today. One was the choice of the song 'friends' that K made. The history behind what happened in this segment, that felt emotionally charged, was supplied verbally to the clinician/researcher after the session by the student teacher who videoed the session. K had had a very confusing and emotional morning over relationships with girlfriends within the unit and class. For her to choose this song around this subject (made up for and with the other client originally) showed she wanted to communicate around these issues. However for her to have language to express this is very difficult. Her body language showed she was very sad and at one point the MTS thought she might cry. This was unusual for K.

The other notable segment was another improvisation using the claves, one in each hand for both MTS and K, and playing with words and syllables in a chanting and improvisory way. This made a very physical connection between the rhythm of speech, movement, sound, communication and K in relationship with the MTS. It was not as fluent as in the piano improvisation that was a non-verbal form of communicating, but had an order and sense of connection between rhythm, speech and movement perhaps in a more direct way than the 'ball on drum'. The sound and kinaesthetic or vibrations of the stick tapping appeared to go right through the MTS's body and made a connection with K communicating in a way not experienced previously. When K crossed her hands to play, it seemed easier for her to play than it did for the MTS. K generalised by transferring the idea for this segment immediately across to the 'ball on drum' activity.

Transcriptions from videoed session 6: an example

Session 6: K 24/11/05: Transcription [26/11/05] from the video footage by researcher

M = MTS

K= Participant

Individual session

OPENING SONG WITH BODY ACTIONS

K: lost the patterning sequence of this - we have done it each week.

K: tapping, clapping and stroking movements involved

– probably the stroking was the most consistently in time - sometimes the song allowed us to go slower and faster. Twice K did two movements for 3 syllables and did not attempt to sing – appeared embarrassed that she knew she had not got the sequencing correct – shown by body language.

In repeated (name) she was a little random with the beats

K: as she was lifting the tuba – (to Christina on the video) "mi me go"

INSTRUMENTAL CHOOSING

Chose Tuba:

M: would it be OK if I play the piano with you?

K yea

M: we'll have like a duet

K: wi we da

K: do you want to start and I will join you

M: upward glissando singing anacrusis

K; – went to start and laughed (mutual)– could not play

M: glissando start

K: – on cue but not much sound came out

K: looking unsure

M: gave instruction – blowing, holding, to get notes

K: big breaths as if practising X 3

M: started again –12 bar blues on the piano

K: seemed to know to play on the beginning of the bar of the blues – did it X2

M: realised K having trouble holding it to blow

M: its quite, it keeps turning around

K: Yea

M: shall I hold it for you?

K: yea

M: Came over and helped K hold the instrument and continued to sing the blues

K: blew

M and K breathed together to start

K: laughed with MTS

M: sung a line of the blues and gave a small indication/body movement of it was time to play

K: made a sound

M: 'Yea' – affirming tone for K's efforts - sang another line

K: preparing herself to play – organisation was in time for another little sound

M: sang another line of blues

K: preparing and definitely blew a successful sound in exactly the right spot –quite a high sound – no bodily cueing from the MTS that time

M: 'wow' (excited)

K: looked at the student on the camera to share her excitement of successful playing together

MTS: sang on but the blues has a different pattern at this point – realising this MTS paused but continued not wanting K to feel she had done something wrong- this was repeated and them the MTS cued with breathing where to expect K to join her musically at the beginning of the next line –

K: blew on cue musically

M: still tapping foot and singing; commented " we make a good team don't you think?"

K: blew at the end of the song but little came out

M: kept another line going

K: blew and crossed her legs that sent the tuba rolling around

M: sang a line

K: blew, but no noise – the tuba was getting difficult to hold

This was repeated but K showed she was tiring – and we just finished the 12 bars

M: cued the last section in verbally

M: here we go and breath cued

K: blew tiny note – both laughed

M: sang another line 'another one'

K: blew

M: sang the last line

K: blew near the end and let it drop onto her lap as if she knew that was the end

Turned around to get the wipers

M: did the round up ending

To K: 'fantastic, wasn't that good?'

K: nnnn affirming but in a tone that suggested – it was OK as she busied herself opening the wipers.

K: looking at the camera with a broad smile-and giggling - body language suggested she was very pleased with herself

M: you got some good notes there.

PIANO SEGMENT (5 mins. and 5 seconds duration)

C = crochet or whole beat (long - approx. here)

q = quaver or half beat (short – approx.)

Table 11 Transcription of piano improvisation: Participant K

Participant K	**MTS**
qq c	q triplet
C	C

Participant K	**MTS**
C	C
qq	qq
qq	qq - slight pause
C; heavy with flat hand and arm/jumper	C
Laugh	
C	C - accel
C	C
LH clusters fast and up the piano, flat fingers	Pause – mirrored idea downwards towards her
qqc, cluster at the lowest end	qqc. Cluster at the top end
C sound cluster at the top, leaning over MTS	C sound cluster at bottom, leaning over K
C, sound cluster in the bass	C, sound cluster in the top
C cluster middle	C, cluster middle
qq in the LH, c in the RH with the c lower in pitch	qq RH , C in LH
TOGETHER qqc	qqq
Head dropped and stopped	
	Semiquaver burst and c, alternate hands and fingers
TOGETHER Finger individuated	Began a rhythmic pulse- with body too
Interrupting and heavy, C C in LH upward leap	Heavy C C downward leap

Participant K	**MTS**
C, low, staccato, bass cluster – looks at MTS	C top cluster, staccato
C, middle, staccato cluster	C, middle cluster, stacc.
C, bass cluster with accel feel	C, short, top cluster, accel
C, stacc, top, accel	C, bass, cluster, stacc
C, Both hands lean in one cluster	C, both hands lean cluster
Looks behind to the student on the camera and laughs. Serves as a pause	As she releases the cluster plays a small glissando
C, stacc. Middle (x3)	C, stacc, middle reply (x3)
qq cluster?	qq, single fingers
Pause, c, cluster with elbows out and hands flat on the piano keys	Slow motion to the piano slowing the tempo and c, in the same manner
Laughs	
C, soft same manner of playing cluster	C, deliberately, soft and careful cluster
C, cluster very soft	qq, soft, single fingers
qq RH and C LH lower in pitch, louder statement and stacc q's	qq (C) , crochet did not sound
C louder	C, cluster and dramatic with both hands accented
C	C
Tidies hair	
qqC, 2 hands ? how	qqC same manner
qqC 2 hands	QqC same

Participant K	**MTS**
qqc, with fist and slower	qq fist
C, stacc., bass	C , stacc, treble
C stacc, middle	
C, bass , stacc. together	C, stacc. Bass
Single C, interplay with MTS	
	qq
C, accented, elbows played in clusters together	Minim with elbows playing in a cluster together, while holding down L elbow, R played two quick qq
Went to play with L elbow and hit the music stand – percussive sound	Flipped the stand shut
C C, elbow cluster on black notes going up	CC, same manner downwards
C, elbow cluster	C elbow, C wood of piano
C, elbow and qq on the wood	same
C elbow, c on wood	same
C elbow, c c on wood in order hand then fist	C elbow, C qq on the wood –hand fist fist
C elbow, C stand click	same
C 2 hands and big exaggerated gesture	C C, 2 hands individuated
Tremolo 2 hands	same
Minim two elbows resting	same
together in a waddle of elbows	seven beats with k starting with her right elbow. whole body sways, the first two

Participant K	**MTS**
	unsteady and 5 steady rhythmical beats in mirror/ contrary fashion together
C, 2 elbows together cluster	Same
C, stacc, elbow cluster, forte	same
Same	qq elbow
qq C, hands together on qq with elbow on C	qqC, with elbows on qq and C with hand
Laugh	
qq hands	
Hair tidy	
qq, Operating pedal on throughout next segment until noted	qq C. fingers
qqC, lower	
qqqqC, Both hands alternating in scrambling clusters climbing up the piano	Same going down the piano – both our bodies flowing rhythmically in time for the next 4 interchanges – up and down (physical activity motivated or necessitated this)
Same going up	Same going down
Same going up	Same going down
Same going up	Same going down
Looked at camera coming around to view from a different angle	

Participant K	**MTS**
C, stacc. And with elbow	same
C, stacc. Elbow cluster on the black notes	same
Pedal off	
qq C, flat hand on q's , fist on c – upwards with C	Same in reverse - downwards
qq c, q's fast with LH and in the low bass, c in RH and high	
Smiled	qq pause C, top for qq // then C in bass
C C bottom and top	Individuated fingers micro second interchange
qq 2 hands tog.	qq, 2 hands individuated
2 elbow shuffle alternating	same
C, 2 hands tog	same
LH piano slap, RH cheek stroke, wood slap	Mirrored this
Laugh	Slap shoulder, wood, pno
Fun interchange started Slapped/tapped MTS shoulder then wood	
together and synchronised :	shoulder to wood three times with a regular rhythm
Flapped both hands	Held up hands for k to clap
Clapped together, clapped own , slapped piano	
together: clapped together (facing) then	this was done 4 times alternating clapping

Participant K	**MTS**
slapped the piano (K with her LH and MTS with her RH)	together and the piano slap in a regular rhythm
Laugh	
C C , LH pno – RH wood	C qq, pno to wood wood
QqC, on wood	same
QqC both hands on the wood	same
qqC as above	same
qqC as above	same
Looked at MTS and LAUGHED TOGETHER	qqC, tapped out on cheek
	qqC on piano
qqC on pno	C , high on pno
C, single fingers	same
Same	same
Same	qqC, slapped knees then piano
C low and definite accent	C, high
LAUGHED TOGETHER	
Looked at MTS for 3 seconds in silence	Had enough of that?
Yea	

CLAVES – (a first for both MTS and K today)

(6 mins. duration)

Three segments using the words:

1) basketball

2) ball and …

3) ba-lu-ga-ry.

'Basketball' – the word chosen by K to tap.

Word – 3 syllables spoken over and over with the sticks.

K: picked up the intonation of the speech

M: did the speech –ba-sket and …..

K: the 'ball '– however she was often doing it all with M.

K: sped up without the words as if a little tired of this game and general accel with the sticks

M: repeated fast – balbalbalblal with her

K: could manage the actions and the speech slowly in a chant like fashion

K: played very fast with the MTS saying

M: repeated very slowly

K: with MTS saying (ball) regular beat for 6 for each hand (or 12 –individual) sideways beats when it got very fast – K was driving the speed to a frenzy.

'Ball'

M: suggested ball only

K: hitting only: slowly first and then accel to trill with MTS saying

Baa-lu-ga-ry -made up word in the session

M: changed the tempo and said and tapped much faster

K: picked up the tempo and managed the tap and say reasonably

M: repeated it fast

K: slowed the tempo down saying and playing carefully, swaying a little and concentrating hard – looking to the MTS for support - at about a second per syllable – last syllable that she had been saying came out as Gara

M: led a cheer with the claves in the air – yeeeaaay and shaking the claves in the air

M: we'll do it again

Tog. This time was very slow 46 on the MM –

K: said and tapped with – ba (a as in apple not baa as we had been) but the last syllable was y in Gary

M: suggested crossing over in a diagonal pattern

M: demonstrated this but K went for the crossing at the wrists so we stayed with this while the other stayed with upright, uncrossed claves

This slowed the tapping so the syllables were easier for K

M: suggested with one clave and throwing as we said

This was not too successful but eventually did a rhythmic version of passing – we called it juggling- times 5 at a tempo of about MM=60 – any faster and K could not keep up the speech.

Yeeeeaaah at the end together as it was hard concentrating for her and this felt like a release.

SONG WRITING

Rap today- MTS had written one out from last week's brainstorming and K and MTS went through that and made up more verses.

(1) 'Going on camp'

MTS did it rather fast

K: random for 'going on' but the slow chanting on 'next week' - K managed that with slow 2 claps.

(2) 'Otaki bridge's too complex and K approx. this but 'next week' at a slow 60 was entrained.

(3) 'Bedroom 9 ' - K finished saying and clapping on the 9 with the MTS and 'next week' was said and clapped. "Bedroom.... became our cue for 9 - (the room number she was to sleep in on camp).

(4) 'We need three vans' (x 3) was synchronised well and K appeared to enjoy saying and beating 'next week' shown by a facial expression and the 'week' being expressed with her whole body .

(5) 'see you next week' (x3) was difficult although the 'week' could be managed and the last 'yeaah yeaaah' – K looked forward to each line shown by smiles and successful order and synchronisation with speech.

K: offered next verses together with MTS.

Discussion followed re the student coming to camp and which room she was in – K said 'two', not saying the 'twenty', of twenty two.

K wrote the brainstormed verses

(6) 'I'm excited' – 4 syllables – worked out syllables together. Yeah yeah

Very slow 50 MM and K managing reasonably – difficult to understand

(K asked about the MTS marital status)

when 'flying fox ' mentioned K said weeeeeeee pow

K: flying fox (managed the 3 syllables with clapping and speech and straight into the weeeeeee

M: – said times 3 first and we set off again

K: and M: did the last verse together and finally a big weeeee - siren like (with arms spread up and around together and to the middle and K clapped hands and MTS clapped hers over K's – about 6 seconds)

K : great intonation up high and followed MTS on the downward intonation/pitch until we stopped as our hands clapped. This was significant for its synchronisation, long and flexible vocal sounds and K was controlling the speed of the last clap

M: thumbs up – 'good luck'

K: copied speech and thumbs up.

Throughout this rap/song K was using speech and clapping synchronously

(Mostly through this rap K clapped the rhythm while the MTS tapped her knees. Usually K is aware of this but it did not seem like it today)

SINGING

M: A conversation followed with K about the song 'disco' and her not going anymore, about her top and dancing at home. She had something she wanted to communicate but it was difficult for the MTS to understand.

The song 'Friends' was chosen by K as her choice for singing a revision song from out book of songs over the year.

K: tapping on the bass of the piano while the MTS plays – LH and extremely random to the song's rhythm – except for the last word of the line.

M requested we updated the name of her friend but K could not think of a friend's name – very quiet and thought she was going to cry. –' no', she said, was not getting on with friends.

M: waited about 30 seconds (with gentle questions to try and help her through this time)

The student teacher: helped out with the name – knowing the morning of difficulty K had had with her friends at school today.

K: leaning on her hand and very quiet – no piano playing throughout this last playing.

M: asked her if she was OK –talked about the history of the song and read through the words " sometimes they (friends) make you laugh and sometimes they make you cry"

M: suggested we would have to leave the 'ball on drum' today. Acknowledged it was different without A. The activities of today were acknowledged; such as the piano improvisation, working with the rhythm sticks and camp rap

.M: Closure talk, as the MTS was not sure if it was K's last session.

Student: offered there would be one more week.

K: quiet through this

M: I'll be here – it would be nice to have a session

K: affirmed this

RAP

M: asked for K to make up the pattern of the final rap

K: tap, tap, clap- maintained this with revision and goodbyes added in.

K's 'Rhythmic Events'

Table 12 K's Rhythmic Events: extracted from MT sessions 1 and 6

Session 1, 20/10/05 Extracted 'Rhythmic Events' by the researcher from transcriptions of this videoed session. All observable events below are K's in the LH column, unless noted otherwise and MTS response in the RH column, unless noted.

RHYTHMIC EVENT	CONTEXT
1) Initially; rhythmically random body slaps. - became entrained to the group pulse - stamping synchronised with body slaps	group welcome song with accompanying body movements/slaps to participants names possibly visually and/or aurally to the group pulse.
2) initially; rhythmically random tapping on castanets - became integratively synchronised group pulse.	MTS: singing, familiar song, visual and musical cueing [glissando anacrusis - K; whole body moving (fine and gross motor movement) plus speech/song [on 1st beat of phrase & last 3 beats of song]

RHYTHMIC EVENT	CONTEXT
3) Rhythmically random tapping with LH; piano. 4) supplied the last word [1-2 syllables] of song phrases, at a slow tempo. 5) played percussive piano cluster simultaneously with supplied word (invaded MTS piano space with random, expressively free playing)	piano, harmonies and rhythm for previously composed song. piano, pulsed song, previously composed by group piano, word from group composed song as cue
6) initiated a rhythmic 'motif' [quaver, quaver, crochet or quick, quick, long] on piano	sparked a short improvisation with MTS. MTS: piano - mirroring K; showed great pleasure [beamed] at MTS adding the word 'tomato' to her rhythmic 'motif' [word 'tomato' from 'soup song' of 5) above, composed by the group]
7) rhythmically ordered piano cluster played simultaneously with, and synchronised to words [2 & 3 syllables/ words evolved from the song in 5]	MTS, listener role K; whole range of the piano utilised e.g. rocking body sideways to play low and high single clusters with arms spread wide apart– 2 syllables/words attached
8) as for 7) but using elbows for the piano clusters.	

RHYTHMIC EVENT	CONTEXT
9) fast, fluent, regular movement of jaw when spoke/chanted 'bor', repeated x10 as if one word [for word 'basketball']	
10) initiated twice; two clusters on different pitches, on piano.	MTS: mirrored clusters
11) initiated fast clusters up the piano in a regular rhythm	This ended song writing/ piano segment
12) as in 9); fast, fluent, regular jaw movements in speech e.g. dododo and babababa forming one long sound	K; instructing the other client
13) regular pulse maintained simultaneously with speech – 2, 3 or 4 syllables – single syllable per pulse.	K; bouncing exercise ball (pulse) on bass drum.
14) hesitation, or 'in-between' each bounce/pulse event, occurred with speaking/chanting a 6 syllable phrase.	Tempo: slow beat MM=approx.42 K; bouncing exercise ball (pulse) on bass drum.

Session 6: 24/11/05 – (K's individual session)

Extracted 'Rhythmic Events' by the researcher from transcription of the videoed session. All observable events below are K's, in the LH column, except those noted otherwise with MTS's responses in the RH column unless noted.

RHYTHMIC EVENT	CONTEXT
1) patterning sequence challenged	greeting song with MTS
2) No chanting was attempted with the pulsed movements	In greeting song
3) synchronous breathing with MTS to play tuba.	synchronised with K laughed with MTS as K withdrew from playing a note – this event happened twice.
4) played Tuba on the down-beat at the start of 'blues'	piano and singing – musical cueing of a glissando anacrusis
5) prepared or organised several beats ahead, to play a single note (tuba) in tempo, in musically suitable spaces in the 12 bar blues.	singing, removed cueing unless necessary for successful experience. first time played tuba in a musical context.
6) produced a successful sound & in time rhythmically.	singing blues – no lyric K; broad smile to student on the camera.

K's Session 6 continued:

Piano improvisation, percussively rhythmic by nature followed; 5 minutes duration; contained about 93 interchanges with MTS [complete transcription of segment (Appendix E, Session 6 or notated extracts Figures 8 & 9] This improvisation contained a huge amount of data. It is used as part of the whole session to give a more balanced picture of Rhythmic Events in a session. The speed and fluency between rhythmic production and rhythmic responses was noted by the MTS as generally fast and fluent. (varied, but commonly; MM = 176 between interchanges). It was the first improvisation of this length between K and MTS on the piano, being fully non-verbal The following interchanges were regarded as 'Rhythmic Events' for the purposes of analysing.

Participant K – on piano (bass):	**MTS on piano (treble), unless noted**
7) Initiated 3 rapid clusters	Repeated
8) Single cluster	Repeated
9) Single cluster	Repeated
10) Two quick clusters	Repeated
11) Two quick clusters	Repeated slight pause
12) Single cluster: heavy, flat hand with jumper covering	Laughed together
13) Single cluster	Repeated
14)single cluster – accelerated interchange	Repeated
15) LH clusters fast and up the piano, flat fingers	Pause – mirrored idea downwards towards her
16) 3 low sound clusters; (2 rapid and one	Repeated high

Participant K – on piano (bass):	**MTS on piano (treble), unless noted**
longer)	
17) Single cluster; cluster at the top, leaning over MTS	sound cluster at bottom, leaning over K
18) Single, low cluster	sound cluster in the top
19) Single cluster; middle	cluster middle
20) 2 rapidly produced clusters (one lower in pitch)	Mirrored
21) repeated	Similar, together with K
	K: Head dropped and stopped
	Semiquaver burst and long sound alternate hands and fingers
22) Finger individuated rhythm; indistinct patterns	Together with K, rhythmically pulsed; body moving
23) 2 sound clusters in upward leap; interrupting and heavy	mirrored heavily
24) Single, low, staccato cluster	K: looks at MTS MTS: mirror with top cluster, staccato
25) Single middle, staccato cluster	Repeated
26) Single bass cluster with accelerando feel	short, top cluster, accel.
27) Single staccato clusters, at the top, accelerando continued.	bass clusters, stacc.

Participant K – on piano (bass):	**MTS on piano (treble), unless noted**
28) Single cluster, both hands lean in one cluster	both hands lean cluster
29) pause	K: Looks behind to the student on the camera and laughs. MTS: As releases the cluster plays a small glissando
30)Single stacc. cluster middle (x3)	Stacc. middle cluster reply (x3)
31) 2 rapid clusters	2 rapid notes, single fingers
32) Pause	
33) Single cluster with elbows out and hands flat on the piano keys	Slow motion to the piano slowing the tempo and mirror
34) Laughs – pause	
35) Single cluster –soft, same manner of playing	deliberately soft and careful cluster
36) Single sound - very soft, finger individuated	2 rapid soft sounds – single fingers
37) 2 rapid sounds and single sound, lower in pitch, louder statement and staccato	Mirrored – last note did not sound
38) Single sound – louder	Single cluster and dramatic with both hands accented
39) repeat	Repeated
	K: Tidies hair - pause
40) Two rapid clusters	Mirrored

Participant K – on piano (bass):	**MTS on piano (treble), unless noted**
(alternate hands – different pitches)	
41) repeated	Mirrored
42) Repeated rhythm - with fist and slower	Two rapid sounds – fist
43) Single cluster - stacc., bass	Mirrored in treble
44) Single cluster - stacc., in the middle	
45) Single cluster - bass, stacc. hands together	Single cluster - stacc. Bass
46) Single cluster	Repeated
	2 rapid clusters
47) Single accented, elbows together cluster	Minum with elbows playing in a cluster together, while holding down one elbow, played two quick notes
48) Initiated playing with elbow & hit the music stand by mistake – (percussive sound)	Flipped the stand shut
49) 2 sounds, individuated elbow cluster on black notes going up	Mirrored downwards
50) Single sound elbow cluster	2 sounds - elbow cluster & wood of piano
51) 3 sounds (single elbow cluster and 2 rapid wood slaps piano case)	Mirrored
52) 2 sounds – elbow cluster & wood	Mirrored
53) 3 sounds (elbow cluster & 2 rapid wood sounds, hand then fist)	4 sounds –long (elbow) & long, quick, quick on the wood (hand, fist, fist)

Participant K – on piano (bass):	**MTS on piano (treble), unless noted**
54) single elbow sound, single stand click	Mirrored
55) Single 2 hands together cluster (large, exaggerated gestures)	2 sounds - hands individuated
56) Tremolo 2 hands	repeated
57) Minum - two elbows resting	repeated
58) Individuated, alternate, elbow playing – notated figure	7 pulses with K initiating the first. MTS joined K and together whole body swaying formed contrary motion to each other. About 6 steady rhythmical beats together.
59) Single sound, 2 elbows together cluster	repeated
60) Single sound stacc, elbow cluster, forte	repeated
61) repeated	2 rapid sounds with elbow
62) 3 clusters - quick, quick, long (by hands together on quick, quick & elbow on long)	Same rhythmic clusters but opposite manner – quick, quick with elbows & long with hand
	K: Laugh
63) 2 rapid sounds with hands	
	K: Hair tidy -pause
64) 2 rapid clusters; Operating pedal throughout next segment, until noted off.	2 rapid sounds - fingers
65) 3 sounds (2 rapid and one longer and lower)	Mirrored

Participant K – on piano (bass):	**MTS on piano (treble), unless noted**
66) Both hands alternating in scrambling clusters climbing up the piano. (e.g. quick, quick, quick, quick, quick, long)	Same going down the piano – both our bodies flowing rhythmically sideways in time over the next 4 interchanges – up and down
67) Same going up	Same going down
68) Same going up	Same going down
69) Same going up	Same going down
	Looked at camera coming around to view from a different angle
70) Single sound, staccato & with elbow	repeated
71) Single sound, staccato, elbow cluster on the black notes	repeated K: Pedal off
72) 3 sounds (2 rapid clusters flat hands, fist on higher long sound)	Mirrored – downwards
73) 3 sounds (2 rapid, low clusters with left hand (LH) & and long cluster high)	
	K: smiled MTS: mirrored
74) 2 clusters: bottom and top	Individuated fingers micro second interchange
75) 2 rapid clusters – hands together	2 rapid clusters – hands individuated
76) 2 clusters - elbows alternating	mirrored
77) Single cluster 2 hands together	Repeated

Participant K – on piano (bass):	**MTS on piano (treble), unless noted**
78) 3 sound pattern: LH piano slap, RH cheek stroke, wood slap	Mirrored
	K: laugh MTS: 3 sounds (Slap shoulder, wood, pno.)
79) 2 sounds: slapped/tapped MTS shoulder then wood	
80-83) Repeated here three times in synchrony & pulsed with MTS	Partnered K for three, 2 beat rhythms.
84) Flapped both hands alternatively	Facing K held up hands for K to clap
85) Clapped/patted together, clapped own, slapped piano	
86-89) clapped together (facing) then single cluster on the piano (K with her LH and MTS with her RH)	Repeated four times, regular pulse, rapid interchanges and tempo, in synchrony.
	Laughed together
90) 2 sounds: LH pno – RH wood	Long (on piano) & 2 rapid (on wood)
91) 3 sounds: quick, quick, long; (hands alternating on wood)	Repeated
92-4) Rhythm repeated: hands together (wood) – repeated twice more.	Repeated back - 3 times
	Looked at MTS and laughed together. MTS: Same rhythm tapped out on cheek
	Same rhythm – piano clusters

Participant K – on piano (bass):	**MTS on piano (treble), unless noted**
95) Rhythm repeated – piano clusters	Single cluster - high on piano
96) single finger sound	Repeated
97) repeated	Repeated
98) repeated	3 quick sounds: 2 on knees then piano
99) single low cluster - definite accent	High cluster
	Laughed together
100) 3 seconds in silence, looking at MTS	"had enough of that"? (verbally)

K's Session 6 continued

RHYTHMIC EVENT	**CONTEXT**
101) synchronised a three-syllable chant with clave tapping – facing MTS. [repeated word: bas-ket-ball].	cueing with bas-ket… K; tapped 3 syllables but generally spoke/chanted the last syllable [-ball].
102) initiated acceleration of the regular, rhythmic movement of clave tapping [to frenzy and stop]	- synchronised speech ceased as pulse accelerated.
103) Repeated at faster tempo change, tapping MTS's claves synchronised to chanting a four-syllable word.	Immediately after modelling by MTS.
104) initiated a slower tempo [MM 52] to tap a four-syllable word synchronised to chanting.	K utilised a body sway for the pulse order Immense concentration noted on K's face Looked to MTS for support

RHYTHMIC EVENT	CONTEXT
105) repeated chanted (4 syllables) evenly, while simultaneously tapping (MTS's claves) at a slower tempo	synchronised tapping and chanting with K [MM = 42] - one syllable per tap/pulse
106) juggling/ passing, spoken syllable and 'clave passing' were rhythmically synchronised.	K's speech, synchronised to the pulsed movement, was challenged when tempo quickened. 5 times at a slow tempo [MM = pulse of approx. 60]
107) rap was clapped and chanted in an integrated, pulsed fashion within self and synchronised with external pulse.	tapped and lead rap. at a slow tempo [MM = 52] rap of mostly 1-2 syllables/words with occasional 3-4 syllables/words. - challenge to integrated rhythmic clapping and speech when rhythms of speech required faster articulations and/or four syllables [e.g. 'O-taki bridge' – crochet, quaver quaver, crochet] - clapping with chanting, if syllable stress was evenly spaced and 3 syllables [e.g. 'bedroom 9'- crochet, crochet, minum]
108) vocal glissando of an extended downward swoop, [sound drawing of flying fox] accompanied by arms slowly circling synchronising to the vocal sound in time, tempo and pitch.	synchronised with K, vocally and in movements, ending as our hands clapped over each others - duration of 6 seconds

RHYTHMIC EVENT	CONTEXT
109) LH piano playing was rhythmically random	singing and piano, song: friends during singing of previously composed group song.
110) above rhythmically 'random' bass piano playing merged into order when, with the last word of each phrase, K played percussively and chanted integratively – word/movement/sound per syllable.	K; rhythmically 'random' playing resumed until the next point of reference occurred in the song.
111) silence –very rare occurrence	MTS: while singing and playing song about friends (chosen by K to sing) encouraged K to update the name of a friend for lyrics. K; appearance showed she was emotionally distressed – on verge of tears, head down.
112) rhythmic pattern of quaver, quaver crochet with : tap, tap, clap - maintained during the final rap	MTS: modelling rap with K.

Appendix F - Case Study J

An overview of six consecutive sessions in the study period

Session 1 – (videoed)

(New teacher aide attended and video camera on the piano focussed on J)

The classroom/kitchen, where J and three other students work, was very unsettled. This was due to the Teacher Aide (T/A), who knows the students well and runs this classroom, being away sick. Hand-over in the usual manner was therefore not possible.

A teacher-aide, who has been in the classroom a short time, came with J. This was her first session at any music therapy and was not guided or instructed before the session.

J presented as withdrawn facially but came to the music therapy room willingly and without delay or extra fussing on the way. This involves leaving his home-base room by a side door, down a deep step, and walking about twenty meters, up a ramp and through two doors. The MTS waited to see if he would open the doors himself before doing this for him. Neither time did he make any attempt to open them. He sat in his usual chair and the MTS instructed the T/A to sit in an observational position. There was someone in the adjoining room practising on the drum-kit extremely loudly.

The session was primarily instrumentally based. In this first session the above activities were offered to J, except for the bongo drums or any improvisational playing. This was deleted as J was showing signs of tension, in body language and lack of playing participation. J did however make good eye contact and smiles with the MTS and nodded in time to the music when she was playing the blues on the mouth organ and also later when she was clapping with the Celtic music. J indicated, by returning the instrument repeatedly to the MTS that he did not want to participate by playing but happy to listen and nod.

There was a significant behaviour in the Celtic music segment. J dropped the beater for the frog and bent down to pick it up. He tapped on the floor and started to nod his head and using his finger in front of his eyes in a conducting fashion. Suddenly he stopped this behaviour himself physically by holding his right hand tightly with his left hand and stopping it expressing the rhythm. It was the first time the MTS had noted this behaviour in sessions.

J played the autoharp for approximately half of a 16 bar song, with the MTS initially modelling and singing. In the final segment on the bass drum J played and smiled as he did so. The T/A facilitated by playing with him on the opposite side of the drum and the MTS was on the piano.

Session 2

Disturbed therapeutic space

There was a disturbing start to this session. J's classroom situation was violent today and hence the familiar T/A to J was required in the base room. It was therefore decided the MTS would work alone with J this session. The therapeutic space had meanwhile been invaded, by College students and electrical gear, while the MTS collected J. J's usual sense of order was altered. The MTS wanted J to sit in his usual chair that had been positioned for the video and now was moved. This is where the idea ethically that the clinical work will not be disturbed by the research is nonsensical. However the therapeutic principles remained constant, with the videoing proving to be enormously valuable to the MT process. Because of this different start, J began examining the instruments that are usually on a shelf behind him. This was new behaviour. However J did not take up the MTS's verbal offer of a choice of instruments.

Although J was tense when finally seated, shown by his stiff arms, he stayed in the room and even smiled and gave eye contact to the researcher during the welcome song

when the MTS sang 'its your special time'. Rhythmic responses were minimal in number and size of gesture. They included, nodding, stroking trousers, thumb tapping, stroking of the autoharp (1 or 2 at a time). There was two occasions in this session where J appeared to stop himself deliberately from expressing the beat and music.

Generally there was low participation by J. For example the autoharp that typically he might play a whole verse independently, this session he played 1 or 2 strokes at a time. J either handed back most instruments offered or did not participate (claves, bongos, small finger cymbals and small drum). The most active listening, with head nodding, energised facial expressions and some instrumental playing was to the bass drum sound. A more active response followed by independent playing on the bass drum occurred when the MTS played familiar marches on the piano. Smaller movements were noted in the blues, where J tapped his head with his fingers in time to the dotted blues rhythm. There was a moment, when the MTS started singing and using J's name in the song as she played the piano with the bass drum, that J showed (by facial expressions) that he was particularly happy and attentive.

[The challenging start to the session could have been a factor in J's low participation and/or the MTS's tension following the start, as she wanted J to participate with the video rolling. These factors cannot be ruled out, or other external influences.]

Session 3

Face hiding

J gave the MTS smiles and good eye contact in the classroom and appeared happy to come to MT, shown by an easy transition between classroom and music therapy room. The familiar T/A was able to come as facilitator. The session was conducted primarily with his arm over his face. J had started this behaviour, according to the T/A, briefly the day before in the computer room. J gave lots of smiles and eye contact at the welcome song and looked

at himself in the mirror. J used his right arm to hide his face as the MTS played the 12 bar blues and also after he had looked at himself in the mirror.

A typical choice of instruments was offered to J. As the MTS played the mouth organ, J looked out from hiding just before the end of each song and secreted the mouth organ under his arm to play briefly before handing it back to the MTS. In a Celtic music segment, with the MTS on the flute and J on the wooden frog, he stroked the back if this dozens of times gently and the MTS connected into this beat. J showed that he had understood this synchronising soon after, by smiling and appropriate eye contact, when the MTS paused in time to match his stroke. In the choice segment J indicated both instruments, cymbal and chimes. The cymbal, first choice, was played with the sticks held perpendicular to the floor. The autoharp brought J's longest independent playing of the session. This was the entire song except for the last 2 beats.

Session 4

Familiar T/A was present.

videoed

J presented today as happy and healthy. He appeared to tap and even 'sign' the rhythm of the welcome song (see Figure 7, p. 65). Smiling broadly, J hid as the music started using his RH to beat in time following the tempo changes. He tapped dotted blues' rhythms, gave lots of eye contact from behind his arm when hiding and stopped himself from beating again. J used the claves unusually today trying to balance them one by one in his eye He found that by screwing up his eye, he could make it stay there. As the MTS played Celtic songs on the flute, the T/A encouraged J's clave tapping (by tapping his clave gently to remind him it was there) with the resulting full song being tapped by J synchronously with the MTS. In the autoharp song J initiated a faster tempo change and laughed appropriately as the MTS's singing matched the volume of his playing, softer in

the smaller strokes and louder as he did full sweeps. He stopped playing at the end of the song.

In this session J reached out for instruments and beaters, initiated a change in tempo, understood synchronised playing or connection as the MTS adjusted her volume to his and prepared himself or organised himself physically to play. For example he uncrossed his legs in readiness to play the bass drum. The music energised J to play as the MTS changed key and the tune. He unusually crossed the centre line of his body by reaching across his torso with his left hand (not J's favoured hand) to play the bass drum. A long improvisation followed on the bongo drums with the MTS. A mix of expressive modalities were used in the bongo segment; tapping, scraping and signing, single and both hands, single and all fingers while vocalising, smiling and laughing.

As the goodbye rap was started J picked at his jumper for the first time today, eating the resulting fluff. Possibly J had understood the structure of the session. The content of the rap was comprehended as he beamed at the MTS as she thanked him for great harp playing today.

Session 5

J – sick today but present.

This session was with MTS and no T/A. J presented as pale in facial colour and coughing. He had difficulty with transitions, being reluctant to come and also leave after the session. J grabbing instruments for himself from the shelf behind him which was a new behaviour today. This was not to play them, but for example a period of time was spent straightening and organising the chimes in their box.

J did choose from a small selection of instruments placed on a deep tray and offered to him by the MTS, rather than the usual method of choosing with PECS cards. Those chosen were the frog and claves. He chewed the wooden frog but played the claves for about half a song. He did not engage in playing the bongos or other instruments offered by the MTS and showed little outward signs of involvement in the session today.

Session 6

The video only caught part of J (torso) and the sound.

No available T/A

J was on antibiotics for a suspected urinary infection

There was good eye contact in the welcome song and J appeared to tap out his name after the MTS sang it. He smiled as soon as the piano started. Once more the blues style, with the MTS on the piano, involved J with the music shown by his nodding to the pulse. His RH reached out to beat the small drum placed next to his hand.

Given a choice of two, frog or claves, J definitely reached for the claves. After a while he turned around to return them to the shelf behind. This was a first, returning instruments, but he became preoccupied with trying to stop them falling off the shelf.

When the MTS was playing the mouth organ and singing, J became attentive when his name was used in the song, as it was personalised. After handing the mouth organ back twice the MTS made her LH into a shelf for J's instrument and continued playing and tapping her foot, leaving spaces for J to play. This he did three times, returning the mouth organ to the shelf in between. The MTS began beating in the air as well. J became very stimulated, playing, vocalising, leaning forward and squirming, flapping his hands and then he stopped his RH 'flapping' by his LH holding it firmly.

Unusually, when the autoharp was introduced, J reached out with his LH and played two strokes with his fingers. Thinking this was how he wanted to play we explored the idea but after a while J offered the spatula (large pic.) back to the MTS three times. The last time J banished it with a broad sweeping movement and sat back, crossed his arms in a relaxed manner as if to say, play to me. This was the usual order in this segment and after one verse of the song from the MTS, J played the whole song with facilitation once.

After about 12 regularly spaced strokes on the frog, the MTS cued the next verse in with an exaggeratedly lengthened upbeat. J tapped on the downbeat for the first time this session, but beating was not continued. The MTS tried to engage J that led to a series of events. This was done by the MTS leaning over and giving J's frog a tap. J held onto his quite fiercely which is the first time the researcher had seen that behaviour. She instantly followed by offering hers to J. He began a series of fast, explosive behaviours. These included stroking, tapping, vocalising, leaning forward, squirming and flapping. He began to find the rough patch he had created previously on the frog and picked bits off to chew while twirling the beater in his LH. Following this, as the MTS rolled the bass drum over to J, he leapt up and was out the door and gone. This was the first time he had done this and in fact it was to be the last time the MTS worked with J on her clinical placement. One can only look at options as to why he behaved in this way but these are some possibilities. The strong reaction to invading his instrument and space on this occasion was a distinct possibility (previously he had entered into a game around this activity). Today this intrusion may have been too much for J and he felt threatened and not safe. Other possibilities might be; that he did not want to play the bass drum, that he was frightened by the sound of the rolling out of the instrument, he had had enough music therapy today or simply something quite different that was happening in his mind or environment that the MTS was unaware of. Whatever motivated him, it was J's way today of removing himself from the situation and a new and definite statement.

Transcriptions from videoed session 4: an example

Session 4 - J (3/11/05)

T/A that is familiar to J was present at this session

Notes transcribed directly from the video – includes as much observational behaviour as was possible

M = MTS

J = participant

J: (as video starts) squirming and looking very happy in his seat

Welcome song

M: sang the welcome song to J

J: started to tap out the rhythm with the MTS but stopped this, as he appeared to realise what he was doing.

J: In the silence it looked as if he was signing the rhythm of the song (need to see what he normally does but it certainly looked like this)

M: offered quiet music on the piano -lullaby

J: – smiled and hid immediately– almost laughing – came out and hid again

M: – variations on the lullaby with differing moods and dynamics

J: quieter and appeared traced – infrequent use of RH in time?

Looked at the T/A several times.

As the music came to an end J held his hand still as if listening and knew it was the end.

M – changed tempo to blues

J: picked up the change and used his RH to beat with the new tempo

-Stopped his hand beating by scratching his head – smiled.

-Tapped his head in time - with his RH ring finger – the dotted rhythm x 2 –smiled, flapped same rhythm, smiled as if he realised he was beating with, -difficulty with the dotted rhythm beat to keep up

- lots eye contact and smiles with the MTS – started to sign in time with the beat rather than the dotted notes.

M: kept left hand going and was beating and clicking with the music.

J: stopped and sat with thumb poised ready to beat but stopping himself from fully beating – can just see the muscle contraction for about 4 bars and then stops frozen – a glimmer of a smile

MTS modelled playing a drum and gave it to J – small jembe drum, just at the height of his RH.

- he pushed it around a bit and tapped it with his thumb

M: back on the piano playing the ' blues'

J: RH thumb joined in on the beat occasionally – sometimes on the 1st of the bar and sometimes on the 3rd beat – erratic - smiled at the energy and change to staccato mood of the music – kept smiling to himself.

M: continued in the blues style again but introduced a song about J

J: almost laughed – x2 relaxed taps on the drum and one definite tap right on the first beat of the bar in a very organised manner- hid a little and good eye contact with MTS as well – kept his right hand going in the beat after the MTS finished

Started to rub his nose and appeared to be becoming over stimulated.

M: offered J both claves – he took them both with his RH while rubbing his Left eye with his LH

M: - playing the flute – a song well known to J

J: started rubbing his left eye in time with the MTS – or the other way around 5, beats and J started to laugh and stopped – hid his eyes with his left arm – right hand held both claves in it

- gave the MTS a definite eye contact with smile and disappeared back behind his left arm

Looked out again from behind his arm and seemed to be getting his claves ready for the rest of the song (4 bars) to play the claves. He positioned them together differently in his hand.

M: suggested T/ A play with him

J: started to make clicking noises with the claves in the one hand by rubbing them

T/A: did a mix of the beat and the dotted rhythm

J: positioned the claves so he could put them to his eye- right – like one would for a kaleidoscope and came out from behind his arm to do this - found he could almost balance one in his eye by screwing it up – he had not done this with the claves in previous sessions. J was still trying to hide with his left arm over his eyes

M: – here's another song J

J: laughing – still hiding – dropped one clave onto his lap

M: – play in a duo with the T/A. - model

M: instructed J to take the clave out of his eye.

J: about eight beats definitely independently played in a regular pulse and them back into his eye – plus a laugh on about 5-6-7- beats when he realised we were playing together.

instructed away from the eye – five taps – quicker speed then back to his eye

T/A pulled the clave away from his eye – he looked at her from under his arm still at his eyes and deliberately put it back to his eye – a definite 'testing you out' type of behaviour.

He kept tapping 16 beats plus with tiny stops - when the T/A just gave a little tap on the clave to keep him on task

- back to the clave in the eye and MT finished the tune and segment

M: sang ' put the instrument away' while doing this

J: rubbing eye then smelling fingers afterwards

Flaps rhythmically at the cadence point " well done J - -. " but stopped it with his left hand.

J's RH started to drum against his face

M: introduced the harp but J started drumming with his thumb: initiated following segment short improvisation

M: joined in – reflecting and matching

Mirror and unison – good eye contact throughout the short segment

J: used tapping with his thumb and then full fist

M: call – full

Repeated it and

J: replied with the last two taps- smiled and looked

Tried engaging him but smiled and hid.

Autoharp reintroduced

(usually MTS would model a verse first) but

J: from under his hidden arm reached our and played with his RH fingers on the strings

M: gave him the spatula

Together got the rhythm going – MTS tried to go with his rhythm

M: took over strumming when J took the spatula to his nose to smell.

J: strummed independently – with spatula

Thought J had not realised the song had finished

Second time he suddenly sped the tempo up – fiddled for a bit

M: matched the volume of her singing to J's strokes (– if small stroke– soft; a full stroke – forte)

J: looked out from his arm for eye contact and laughed.

Full strokes at the end with fingers around the spatula and thumb loose.

Stopped at the end of the song and fiddled with the spatula

Still hidden behind his left arm.

M: "put the instrument away' song.

J: – tapping on the spatula in time with his finger– did not want to give the spatula back

M to J: " do you want to play some more?'

J: tapped faster on the spatula and intensely looking at it and very quickly looking at T/A, or to the left, turning the spatula over quickly and smelling the handle.

M: strummed the harp

J: looking at the camera? Tapped the harp; strummed it, smiled

M: singing–' Kumbaya'

J: started to use the handle of the spatula to stimulant himself

M: –'put the instrument away' song to J.

<u>Bass drumming segment</u>

M: set it up for; J- singing and modelling the sound

J: took the stick and uncrossed his legs ready to play – smelling the soft end of the stick a lot – intermittently smiling and playing the drum

T/A: joined us on the drum

M: on the piano – one verse - marching song, familiar to J

J: smelt the drumstick

M: cued J in musically and verbally –personalising the song

J: two hits, then stretched out and up high as if tired – huge yawn

M: changed key and started 'oh when the saints"

J - smiled at the MTS – hid behind hand.

Next verse – J hit his nose with the drum stick head in time – 12 beats to the end of that verse – stroked his cheek – flapped – vocalised and started to stimulate himself with the drum stick in his left hand

T/A: returned the stick to J's RH

J: looked at T/A with RH flapping, (? in time), LH grabbed the beater and reached across his body onto the drum

LH thumb and fingers – 10 beats at a brisk tempo in time

Looking at and smelling the fluffy part of drum stick – more stimulation

M: Two Celtic songs

J: indicated he knew the songs and vocalised with the piano (? Singing)– tapped the soft part of the drum stick for a while, stroking it with his hands and nose and twisting it in his hands flapping in time- very excited but not stimulating himself sexually

J: tapped initially but then started picking at the stick – could not be engaged with the music making t this point

M: 'put the drum away'

J: smiling and looking at MT – maybe waiting for the part in the song he seemed to be responding to 'well done J--. ' sat up and squirmed in his chair on the 'well'

Bongo

MTS: modelled boldly and left a space for J

J: laughed and covered his faced with the left arm

M: – repeated and left a space

J: peered out from under his arm and played

Engaged in some interactive playing – lots of smiles and hid again

J: used both hands, RH pointer, LH all fingers but especially middle and ring – mix of tapping and scraping, some head nodding- looked up when the MT did a roll at the end

(In-depth view of J's bongo drumming)

M: – crochet, quaver, quaver, crochet, crochet – firm and bold

J: smiled and understood the silence was for him, offered drum – hid

M: reissued invite and offered

J: with RH and still slightly hiding played – quaver, quaver crochet

MT reissued

J: nodding head – frowned

Reissued and cued

J: tapped quietly on the side of the drum

M: replied on the side of the drum

J: scrap (long) tap, tap

M: mirrored

J: beamed –short chuckle – together

Squirmed in his seat and prepared two hands

J: quaver quaver crochet

M: replied – still good eye contact

M: replied but the dynamic was too loud compared with J

J: looked away

But came back with another motive

J: started a beat with his RH thumb

M: joined in with a rhythm

Stopped with him

M: scrape

J: smiled and covered eyes

M: enticed and waited

J: started with both hands and MT joined but this time J looked confused – did he want MT to wait her turn?

J: continued with intricate tapping and scraping of both hands

M: single tap with J alternating time and with each other 5 times

J: appeared to be enjoying the fact that his usual flapping of the RH also now made a sound – vocalising and laughing

Arhythmic dance of fingers pursued with slow scraping and then a frenzy of tapping – both playing at times together

Both hands going so fast and then in the air too – withdrew and held RH with LH. MT continued a less frenzied rhythm

J: silence for about nine seconds and more finger dancing

M: started it with a long scrape and taps

Vocalising and tapping with both hands – smiling and intense look at the drum

M: singing with tapping

Alternating tapping and singing

J: smiled and looked at MT – understood this turn taking dance

Appeared to be enjoying the singing and tapping – listening? And head started to nod

The MTS brought the improv. to an end with a roll – J gave a long look to the MTS

M: sang 'putting the drum away'

J: RH thumb tapping in the air

BONGO IMPROVISATION – 4 mins. 40 seconds duration

J: Participant

M: MTS

C=crochet or whole beat

q=quaver or half note

Table 13 Transcriptions of J's bongo improvisation

J's rhythm	**J's body language**	**M's rhythm**	**M's body language and/or how played**
		C qq C C	Forte, using both bongo
	Looked at M on 1st beat		

J's rhythm	**J's body language**	**M's rhythm**	**M's body language and/or how played**
		qqqq C C	
Beating on the underside of the drum with Min last rhythm.		1 second rest	
			Offered to J by tilting to him in a definite move
	Covered his face with L arm		
		C qq C C qqqq C rest. Repeated similar rhythm but using different order of bongo	
			Offered to J
q's with RH thumb and C with flat of hand	Tipped his head up so he could see M and peering at M from under his arm	C qq C	Softer and on own bongo side
	Came out from behind his arm.		Signed she was offering the drum for him to join- palm up and

J's rhythm	**J's body language**	**M's rhythm**	**M's body language and/or how played**
			gesture towards J
	Facial response: frown that J does when he is about to nod from side to side when he is enjoying the music	C qq C C /q2semiq qq	Rocking in time with his nodding as playing. Challenging j by leaving the last 2 taps for him but hovering as if ready to play
Small taps on the side of the drum with RH thumb		Tapped metal side of the drum in response	
	Looked at M		
C qq,: LH thumb scrape for C, q- thumb tap, q – flat of hand tap	Looking away to the right	C qq; scrape tap, tap	
	Beamed, eye contact with M, giggled with M		
qqq ; with LH fingers	Leant forward, squirming in seat and settled back smiling	qqq; quickly with fingers	

J's rhythm	**J's body language**	**M's rhythm**	**M's body language and/or how played**
	Pulled the drum up towards him and higher onto his lap, looking at the drum and smiling with RH flat on the skin and rocking in his seat a little		Rocking in her seat with J
Fiddled with the skin with RH thumb		q C; Scratching with fingers	
CCCCCCC regularly (MM: 120)	Looking away to the right	TOGETHER Softly joins J using his pulse (C qq qq C)	
RH thumb circling the skin making a scratching sound		Similar matching	
	Smiles and hides behind L arm-laughs		
		C qq C C moderately soft dynamic	

J's rhythm	**J's body language**	**M's rhythm**	**M's body language and/or how played**
qq C frenzy and indistinct: both hands but mostly right		q C C	
Looked as if interrupted			
Both hands tapping in an intricate fast dance, using RH pointer to scrape sometimes	School bell went loudly but J did not react in any outward way	At the same time M tried to find a pattern or pulse to contain this	
Tapping continued fast (MM 200)	Looked up at MTS synchronised for a split second together	As above – together with J in a supporting role	
C		C	
C qq C		C qq C	
	Laughed and excited shown by squirming and body language ; vocalised		
RH scraping and LH tapping		qqqq C	

J's rhythm	**J's body language**	**M's rhythm**	**M's body language and/or how played**
Using RH pointer very deliberately to tap and scrape		Scape and matching TOGETHER taps	
LH scrapes, hand resting on the skin		Scraping in a circle	
Looked at M hard			
TOGETHER WITH J's taps around the qq C and CC qq		TOGETHER Trying to find order with J mixture of mirroring and call and response when possible	
C C qq definite and with LH		C C qq – some haziness for a split second	
qq C RH pointer		qq C	
Tapping with LH, RH flapping starting to get out of control			
	Both hands flapping furiously in the air. Looking to M and then to		

J's rhythm	**J's body language**	**M's rhythm**	**M's body language and/or how played**
	the left		
	LH grabs RH to stop it		
	Smiling and holding his RH firmly with LH. (Looked to the L and then at MTS again)	C qq C C, then C (scrape), C(tap,) C (scrape), C(tap), C qq C C	
		Repeated above	
On the repeat J reached out with LH spread wide and placed it on the drum as if to say 'hold everything' , LH thumb tense			
9 seconds of silence	Intense concentration look on J's face, RH thumb moved a little x3 rhythmically in the air		
		Scraped and tapped	

J's rhythm	**J's body language**	**M's rhythm**	**M's body language and/or how played**
LH thumb started to scrape and tap		thumb gently	
C qq C tapped LH with M	Looking at M		
Both hands tapping and vocalising through several exchanges		C qq C C (and (qq C trying to bring in some order and steadiness alternating with singing (child's minor third chant)	
C		C	
	Looked up and smiled at the response	Singing C qq; (going down the minor third on the first q) then responding to this with qq C, tapped out	Repeated a few times
Started nodding (x 4 beats) from side to side with the music		pause	

J's rhythm	**J's body language**	**M's rhythm**	**M's body language and/or how played**
		qqq C	
qqq C	Looked at M and LH held RH	C C C qq C C C rest	
Nodding with the tempo	Holding RH with LH	C qq C qq , tremolo that faded. Tempo was slowed in an exaggerated style	
	Looked up at the tremolo and gradually then down slowly		
		Sang 'Put the instrument away'	Removing the bongos slowly.
Thumbs still beating a little in the air			
	Looked to the left and started; picking at his jumper – 1st time today		

Goodbye rap

M: singing "thank you for your playing today"

J: smiled and started picking his jumper; appeared to have understood the structure of the session and that it was about to end.

Rap – when said "great harp playing today"

J – smiled

After the rap it was 18 seconds before J leapt forward to leave – almost did when T/A cued him visually with her hand.

J's 'Rhythmic Events'

Table 14 J's Rhythmic Events extracted from MT sessions 4 and 6

Session 4, 3/11/05; (familiar T/A to J present) Rhythmic Events' (REs) data extracted from transcription of video footage of session 4. Occasional grouping of 'Rhythmical events' have been noted for the flow. All observable events LH column below are J's unless stated otherwise, RH column are MTS's responses unless noted

RHYTHMIC EVENT	CONTEXT
1) tapped out rhythm	singing, welcome song J; possible inhibiting noted
2) the rhythm, hand drawn in the air	singing, 'welcome song'
3) infrequent beating of pulse by RH	piano, lullaby
held hand still as the lullaby ended see figure. for notation of 4-8 inclusive	
5) followed the tempo change, beating in air in new tempo	Transition of lullaby into Blues
6) beating changed to head scratching	Blues, piano J; smiled
7) tapped a dotted rhythm on his head and flapped the same rhythm	Blues, piano J; smiled

RHYTHMIC EVENT	CONTEXT
dotted rhythm tempo changed to pulse beat in air	Blues J; lots of eye contact & smiles.
9) beating inhibited by RH thumb poised/ tense; muscle contractions to pulse continued to be just observable	Blues, piano and singing
10) intermittent beating – often 1st or 3rd of the bar.	blues – change in energy & duration J; acknowledged the changes, by smiling
11) 2 relaxed, pulsed taps plus 1 definite tap right on the 1st beat of the bar	when MTS personalised blues song J; Laughed, hid but good eye contact
12) kept RH beating after song finished	
13) rubs left eye in a regular pulse	matched J's pulse, Celtic flute music J; laughed after 5 synchronised beats, eye contact & hid & peered out again
14) 8 regular beats, claves	flute, matched J's pulse, familiar music. J; laughed as the last 3 beats synchronised
15) initiated a quicker tempo; 5 regular taps [claves]	after MTS instructed J to remove clave from his eye.
16) tapped a regular 16 beats; claves	T/A: some facilitation (small taps twice on clave if J stopped) J; mild confrontation with T/A over clave in eye.

RHYTHMIC EVENT	CONTEXT
17) beating rhythmically in air	MTS: transitional song, 'put the instruments away' J; inhibited flapping by LH holding RH firmly.
18) RH tapped against his face	to above song
	offered autoharp
19) initiated tapping on small drum	
20) rhythmic interaction on drum (short improvisation) – using thumb and fist	matching and reflecting J; smiled, good eye contact and hid
21) reached for autoharp, strummed independently with fingers initially, followed by broad, pulsed strumming with pic (adapted spatula)	singing and working key buttons of autoharp
22) initiated faster tempo, autoharp	as second verse of song began
23) strumming autoharp	MTS: singing, matched stroke duration and tonal intensity of pic strokes J; eye contact with MTS at matching [from hiding position] and laughed.
24) stopped pic strokes/ pulse at the end of the song	
25) tapping (pulsed) on spatula with finger	to MTS: singing familiar 'putting instruments away' song
	MTS: addressed J verbally, " do you want to play some more"?

RHYTHMIC EVENT	CONTEXT
26) tapping very fast on the spatula	J; intense look at spatula, looking left (or at T/A), twirling spatula and smelling handle.
27) tapped on the autoharp with the spatula	to MTS: singing different but familiar song J; smiled
28) couple of beats, bass drum	MTS: cued verbally, musically and personalised the song J; stretched and yawned
29) beat nose with drum stick (fluffy soft end) - 12 regular beats	when MTS: changed key on piano, familiar song. J; self-stimulating behaviour followed, ie. Stroked cheek, flapped, vocalised, LH with drum stick between legs T/A: took drum stick from J and returned it to RH
30) RH beating in air to march pulse	piano
31) initiated and beat a brisker tempo (x10), bass drum.	piano J; LH grabbed stick – leaning across his body to beat.
32) regular tapping on the soft drumstick head.	MTS: piano, Celtic music. J; Stroking, twisting and hands flapping

RHYTHMIC EVENT	CONTEXT
	followed. Rhythmic event ceased as J 'picked' at drumstick head.
34) – 54) bongo drum rhythmic improvisation with MTS; transcriptions in session notes, appendix and extracts notated (with contextual behavioural events) in figure	
	bongos, offered a rhythm, quite boldly using both drums. J: Looked at MTS on first sound
	MTS: bongo, re-offered similar rhythm
34) tapping (indistinct rhythm) on metal of drum	
35) initiated communication – quaver, quaver, crochet. (thumb, thumb, flat of hand)	J; tipped head upwards, while hiding behind arm, for eye contact with MTS after event.
36) offered rhythm – crochet, quaver, quaver. (scrape (crochet), tap with thumb (quaver), tap with flat of hand (quaver).	mirrored response
	J; beamed, eye contact, giggled
37) tapped quaver, quaver, quaver (or quick, quick, long)	mirrored response J; leaned forward and gathered bongo to chest, smiling at drum, RH flat on skin
38) fast regular tapping on bongo	gentle rhythm fitting into J's pulse J; looked away to right
39) quick, quaver quaver crochet flowing into both hands tapping on bongo- fast intricate rhythm	mirrored rhythm

RHYTHMIC EVENT	CONTEXT
40) tapping faster [MM = 200]	synchronised with some beats J; eye contact
41) offered/ initiated one definite tap	mirrored single tap
42) offered crochet, quaver, quaver, crochet rhythm	mirrored rhythm J; laughed, vocalised, excited squirming (body language)
43) hand individuation – RH scraping, LH tapping	offered rhythm, quick, quick, quick, long
44) 2 definite rhythmic statements	mirrored both rhythmic offerings
45) flapping heard as tapping, by both hands on drumhead.	J; LH grabs RH to stop the action.- smiling throughout
46) RH first, then LH also 'flapping' in the air	J; glances at MTS, then to left
	MTS: gentle rhythms J; Spread LH wide onto drum skin
47) Pause of 10 seconds silence	J; intense concentrated look at drum - thumb held poised tense in the air
48) rhythmical movements of thumb in air (just detectable)	
49) gently initiated a scrape and tap	mirrored
50) offered long, quick, quick, long -	J; looking at MTS

RHYTHMIC EVENT	CONTEXT
tapped	
51) both hands tapping – indistinct rhythms.	J; vocalised MTS: sung minor 3rd chant intertwined into this Rhythmic Event.
52) initiated single tap	MTS: mirrored J; responded by looking up and smiling at MTS.
53) nodded to the beat	MTS: singing and tapping J - mirrored MTS's initiated rhythm back - held LH with RH
	offered quick, quick, quick, long
54) mirrored MTS	J; eye contact with MTS LH held RH
55) nodding & acknowledged tempo or dynamic change and/or tremolo.	MTS: initiated speed & dynamic change ending with tremolo. J; by eye contact as tremolo started and looked slowly down
56) beat in the air with thumb	'putting away' song
57) looked to the left; started picking a his jumper	J; first time this session

Session 6; 17/11/05 (no T/A) 'Rhythmic Events' data has been extracted by the researcher from transcription of video footage. All observable events below are J's in the LH column, unless stated otherwise; MTS's response in the RH column unless noted otherwise.

RHYTHMIC EVENT	CONTEXT
1) RH tapped out his name.	Following use of name by MTS in 'welcome song'
2) beating in air	to receptive music, piano
3) nodding	as '12 bar Blues' started; piano
4) initiated drum beating	J; reached for drum during Blues
5) RH tapped the pulse on torso	with Celtic music, flute after J had reached for the claves and returned them to the shelf behind (first time behaviour)
played the mouth organ; one or two sounds (suck and blow)	blues: mouth organ J; vocalised, seat squirmed, 'flapped', repeatedly (X7) reached for instrument and put it away (on MTS's hand)– hiding face - LH inhibited RH - long vocalisation.
8) reached out, played autoharp [3 strokes].	singing, and strumming when J intermittently stopped.
9) 5 strums on autoharp [MTS: 1 strum] followed by 10 strums.	singing & strumming – second verse of the song
10) reconnected back into pulse tempo,	singing & strumming

RHYTHMIC EVENT	CONTEXT
on autoharp	
11) RH beat in air	to the familiar song, singing
12) regular, stroked beats on the 'frog percussion' [21 strokes]	singing
13) tapped on the down beat [1st of the song]	after glissando, anacrusis cued from MTS: singing
14) Initiated increased tempo, of stroking and tapping, during improvisation played on 'frog percussion'.	after MTS leant towards J and tapped on his frog – followed up by offering hers. J; held his 'frog' tighter - vocalised, flapped, leant forward, squirmed, twirled stick – music improvisation ended with J 'picking' bits off frog & tasting. Leapt out of the room abruptly

Appendix G - Autonomy Profile

Source: Kenneth E. Bruscia (1987). *Improvisational model of Music Therapy*. pp. 444- 448.

Definition

The autonomy profile is a composite description of the role relationships that the client forms when improvising with a partner (or in a group). It therefore focuses only on intermusical or interpersonal relationships.

Scales within the profile provide a means of analysing role relationships within each musical element in terms of: how often the client takes leader versus follower roles, how these roles are manifested musically, and the conditions under which these roles are taken, maintained, and relinquished.

Table XXIII provides a definition of each scale belonging to the profile.

TABLE XXIII

SCALES IN THE AUTONOMY PROFILE

Rhythmic Ground. What role relationships do the client and/or partner develop through tempo, meter, and subdivisions?

Rhythmic Figure. What role relationships do the client and/or partner develop in determining the rhythmic content and form of the improvisation? How do they relate to each other with regard to rhythmic themes and their sequencing?

Dependent. The client takes the follower role exclusively, and never takes a leader role. In doing so, s/he depends entirely on the partner in all matters, including the content of his/her own music as well as the overall direction of the improvisation. This stance is taken regardless of any manoeuvres by the partner to encourage leadership. When overwhelmed by the partners music, the client's participation may wane or cease altogether.

In relation to other profiles, this role may be assumed through undifferentiation, fusion, stabilization, and change. Musically this includes: focusing exclusively on the

partners music; incessantly synchronizing with or imitating the partner's rhythms or melodies; following all changes made by the partner in tempo and volume; fusing with the partner's timbres and textures; and allowing the partner to control all formal aspects of the improvisation. Having no musical identity, the client acts as neither soloist nor accompanist.

Follower. The client consistently takes the follower role more readily than the leader role. Responsibility for determining the quality, content, and/or sequence of the musical element is given in large part to the partner. The client is not strongly inclined to control or direct the improvisation or to influence the partner, except when the conditions warrant such a change of role. Conditions under which the client relinquishes the follower role are: when the partner refuses to take the leader role; when the partner relinquishes control in a way that threatens the musical improvisation; or when the partner's directions are unacceptable to the client.

In terms of the other profiles, the follower role may be assumed through fusion, integration, stabilization, variability, or contrast. Musically this includes: offering rhythmic and melodic grounds more often than figures; synchronizing with or imitating the partners rhythmic or melodic themes; matching the partner's volume and tempo; fus1ng or integrating with the partner's timbres or textures; and allowing the partner to determine the sequence of thematic material. The subject acts as an accompanist more than a soloist.

Partner. The client assumes leader and follower roles with equal frequency. Responsibility for determining the quality, content, and/or sequence of the musical element is shared equally with the partner. The client and partner influence one another equally in controlling or giving direction to some aspect of the music. The client assumes the leader role when the partner accepts him/her as leader or when the partner accepts the follower role as well as the specific direction taken by the client; the client assumes the follower role when the partner takes the leader role and when the client accepts direction given by the partner.

In terms of other profiles in this assessment, the partner role may be assumed through fusion, integration, differentiation, stabilization, variability, contrast, stimulation, or relaxation. Musically, this includes: offering rhythmic and melodic figures as often as

grounds; supplying half of the rhythmic and melodic ideas for thematic development; using volume levels, timbres, and textures that are equally prominent as the partner, and only occasionally more or less prominent; sharing control over the overall volume, tempo, timbre, and texture; and allowing the sequence of thematic material to evolve out of musical interaction with the partner. The client acts as soloist and accompanist with equal frequency

Leader. The client consistently takes the leader role more readily than the follower role. In doing so, the client attempts to influence the improvisation and partner by controlling or giving direction to some aspect of the music. Conditions under which the client relinquishes the leader role are when the partner refuses to take the follower role, when the partner rejects the leader's directions, or when the partner takes the leader role in an assertive, insistent, or demanding manner.

In relation to the other profiles, the leadership role may be assumed through fusion or integration, stabilization or change, stimulation or relaxation. Musically, this includes: offering rhythmic or melodic figures more often than grounds; supplying most of the rhythmic and melodic ideas for thematic development; using volume levels, timbres, and textures that are more prominent than the partner's; controlling fluctuations in the overall volume, tempo, timbre, and texture; and determining the sequence of thematic material. The client acts as a soloist more than an accompanist.

Resister. The client continually attempts to evade or destroy any leader-follower relationship with the partner. The client does not attempt to influence the overall improvisation or the or the partner's improvising, and does not participate in any joint efforts or interactions. Instead, s/he becomes absorbed in his/her own music, or does not participate in the improvisation in any meaningful way. This role is taken regardless of any manoeuvres by the partner to lead or follow, To assume this role, the resister uses withdrawal, flight, and/or aggression. The primary intention is to move towards the self while also moving away from or against the other.