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The Effect of Music Therapy on Self-Reported Affect in Hospitalised
Paediatric Patients

By

Ruth Elizabeth Armstrong

A Thesis

Submitted to the New Zealand School of Music
in Partial Fulfilment of the Requirements for the Degree of
Master of Music Therapy

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Abstract

The present research examines the effect of music therapy on the affect of hospitalised children. It took place on a paediatric ward of a New Zealand public hospital. This study aimed to investigate the role of music therapy in addressing patients' psychosocial needs. Literature on the impact of hospitalisation, and on the use of music therapy in hospitals and paediatrics was reviewed. The research involved an audit of the therapist's clinical notes from music therapy sessions over the course of seven months. The clinical notes included measurements of children's mood from the beginning and end of sessions, using McGrath's (1990) Affective Facial Scale. It was hypothesised that mood measures following music therapy would be higher than pre-music therapy scores. Statistical analysis of the facial scale data did not show a significant difference between 'before' and 'after' measures. These results were discussed with regard to a ceiling effect (this is, the measurements indicated patients were at the happy end of the scale before the music therapy session, so there was little room on the scale for mood to improve following music therapy). The measurement of emotion did not prove to be straightforward. The hospital environment may have influenced the patients' responses in a number of ways. These environmental influences are discussed with reference to examples from the clinical notes. The usefulness of facial scales in this context is discussed, as well as other limitations of the research. Suggestions for future research include the use of other mood measures, and the inclusion of measurements of parental mood and how this affects the child.

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Introduction

The present research took place on a paediatric ward of a public hospital in New Zealand where the researcher worked as a Music Therapy Student (MTS) on a clinical placement as part of her Master of Music Therapy requirements. The MTS worked alongside the play specialists and the health school teacher in the Allied Health team. The play specialists are employed to provide children with experiences that support development and learning, to prepare children for medical procedures and help them cope with pain, illness, fear and anxiety associated with hospitalisation.

In working in a team with these professionals, the MTS developed an approach that focused on many of the same issues the play specialists addressed, so that the work carried out by play specialists and the MTS complemented and reinforced each other. Patients typically do not stay on the ward for long. The MTS worked on the children's ward for 3 consecutive days per week, to maximise the possibility of building rapport with patients and the opportunity to work with them more than once where possible. However, it was common for the MTS to only work with a patient once before they were discharged. Music therapy was therefore often conducted within a single session framework.

The music therapy practiced included a range of musical activities, determined by the needs and preferences of the patients. Guitar and various tuned and untuned percussion instruments were frequently used, as well as occasional use of a piano, flute, and whistles. Sessions typically involved interactive music making between patients and therapist, in improvisation

and recreating familiar songs. Songwriting, movement to music, and creating musical stories were also used.

This study focuses on psychosocial and emotional aspects of children's care, to reflect the goals and approaches used in the music therapy work and more broadly, those of the allied health team. Literature pertaining to the impact of hospitalisation on children and literature on music therapy work in paediatrics is examined in order to provide the context from which the present study emerged.

Personal Stance of the Researcher

The MTS went into the year's work on the paediatric ward with her own background, which influenced her work in this setting. This section therefore is written in first person prose. I felt it was important to consider my own experiences, and acknowledge the way they might impact upon my clinical work and research. Indeed, McFerran (2006) discusses the way research questions are borne out of underlying, more personal questions. She states that our questions "are shaped by our experiences and our thoughts, our clients and our colleagues, our successes and our failures." As a child, I suffered from respiratory illness, which saw me come under the care of a specialist paediatrician, with several outpatient visits to hospital. Regular visits to an endocrinologist for another matter in a neighbouring city resulted in many blood tests, and I recall feelings of associated anxiety, even while travelling the 1 hour 30 minute car journey to get to the appointments.

As a teenager, an admission to hospital had a considerable impact upon me. I remember feeling scared and isolated, uncertain about the

medical procedures I had to undergo, and worried about my health. Several years later, when embarking upon a university education in psychology, I became fascinated by developmental psychology, neuropsychology, and examining the way the brain functions in sensation and perception, which I discovered often overlapped with the things my friends were covering in their medical training. When considering the music therapy placement for the year, I was drawn to working in a hospital setting, with a particular interest in working with children. My own experiences led me to reflect on the way that hospitalisation impacts upon children and how music therapy might be able to help patients cope with the hospital experience. While using McGrath's (1990) Affective Facial Scale in my practice on the children's ward, I became interested in further investigating how pooling these data may provide a measurement of the effect of music therapy on mood.

Literature Review

This literature review is divided into five main sections, with various subsections included in each section. The first section details the research on the impact that hospitalisation has upon children and how they cope with stress, anxiety and pain while in hospital. The second section discusses research on the use of music therapy in hospital settings, while the third section narrows this further to the application of music therapy in paediatric care. The fourth section examines research using facial scales, and the final section describes the present research.

The Impact of Hospitalisation: Coping with Stress, Anxiety and Pain

The Stress of Hospitalisation

Hospitalisation can be stressful for both children and their families (Skipper & Leonard, 1968). Hägglöf (1999) identifies that not only medical procedures, but also the very process of being hospitalised itself can elicit psychological stress. Children's abilities to cope and adjust depend upon the type of trauma, the child's temperament, and the support provided by staff and family.

Peebles-Kleiger (2000) goes further and identifies hospitalisation as a traumatic stressor. The Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000), defines a traumatic stressor as an event where there is "actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (p. 463). Peebles-Kleiger goes on to explain that hospitalisation can be particularly traumatic when life is under threat, death occurs, there is displacement from one's community, or one is exposed to disfigured bodies.

Shields (2001) identifies seven factors that augment emotional trauma in hospitalised children, based on a review by Wright (1995; as cited in Shields, 2001). These factors are:

1. Admission exceeding 2 weeks
2. Painful injuries or illness
3. Lack of sufficient preparation for routine admissions
4. Prior negative experiences of hospitalisation
5. Parental absence
6. Parental anxiety
7. Inadequate paediatric training for hospital staff.

While there does not seem to be any easy way to avoid some of these factors (such as lengthy admission or painful injuries), others in this list can be addressed to promote coping with hospitalisation. Hospitals could implement programmes to prepare children for surgery and other medical procedures, parents could be encouraged to actively be involved in caring for their child in hospital, staff could take time to help parents with their fears for their child, and hospitals might request staff working on children's wards to be educated in paediatric care.

Indeed, hospitals seem to be taking steps in these directions. Increasingly, hospitals are including family-centred approaches to children's care (Ayson, 2007). The roles of music therapists, and play specialists or child life specialists, focus upon providing psychosocial care alongside the medical care that the patients receive (Edwards, 2005; Froehlich, 1984; Hendon & Bohon, 2008; McDonnell, 1984; O'Neill & Pavlicevic, 2003, Rudenberg & Royka, 1989). These therapists and specialists use their skills

to support family units, provide information and use other methods to relieve anxiety and prepare both children and their families for upcoming procedures (K. Aldridge, 1993; Brewer, Gleditsch, Syblik, Tietjens, & Vacik, 2006, Whipple, 2003).

Like Shields' (2001) list of factors that increase trauma, Petrillo & Sanger (1980) list some of the difficult and stressful situations faced by the hospitalised child. These include:

1. Separation from family and home
2. Unfamiliar people and room
3. Being subject to nurses and staff carrying out procedures that could be painful
4. Unfamiliar environment, equipment and routines
5. Understanding of illness – young children often perceive illness as being a consequence of something they or their family did.

It seems important to take steps to help children cope with the impact of hospitalisation when one considers the myriad of issues they are faced with when admitted to the hospital ward.

Physiological and Behavioural Effects of Stress and Anxiety

The relationship between stress and anxiety is delineated by D. Aldridge (1993). He explains that stressors experienced by the individual can produce a state of anxiety. Anxiety can involve both the subjective feelings of worry and nervousness as well as physiological changes. When people have little control over their situation, and may not understand their diagnosis or the medical procedures necessary, and may not have readily

available support; then it would seem likely that hospital could provoke anxiety and other negative emotions.

Lepore, Miles, & Levy (1997) indicate that the negative emotions associated with stressful environments can adversely impact upon health and wellbeing. Rozanski & Kubzansky (2005) state that negative emotional states can effect physiological changes. They explain that there is an increase in stimulation of the sympathetic nervous system, which in turn leads to a faster heart rate, higher blood pressure, and delayed recovery. Additionally, Skipper & Leonard (1968) note that stress can cause higher temperatures, sleep disturbances and post-operative nausea. Therefore, interventions that aim to reduce negative affect and promote coping seem particularly valuable in the hospital environment.

In addition to physiological manifestations of stress, children's behaviour can also be affected by stress and hospitalisation. Harbeck-Weber & McKee (1995) cite two earlier studies that provide statistics on children's reactions to hospitalisation. They report that within 2 weeks of undergoing surgery, 11% of children exhibit severe behaviour problems (Lumley, Melamed & Abeles, 1993, as cited in Harbeck-Weber & McKee, 1995) and that increases in anxiety and/or aggression have been observed in 93% of preschool children following hospitalisation (Aisenberg, Wolff, Rosenthal & Nadas, 1973, as cited in Harbeck-Weber & McKee, 1995).

Coping with Stress

In developmental psychopathology literature, it is widely recognised that individuals have three fundamental psychological needs. These are namely relatedness, competence and autonomy (Skinner & Wellborn, 1994).

Relatedness refers to having a healthy sense of self-esteem and feeling connected with other people in secure attachments; competence involves interacting effectively with the environment to achieve positive outcomes and avoid negative outcomes; and autonomy relates to the need to make choices and garner some control over the environment.

Coping resources are drawn upon when any of these three basic needs come under threat. Various theorists and researchers have proffered a number of different definitions for childhood coping. One such definition is that provided by Rutter (1983; as cited in Skinner & Wellborn, 1994). This definition describes coping as “what the person does about the stress situation. Coping mechanisms include individual’s attempts to directly alter the threatening conditions themselves, and the attempts to change only their appraisal of them so that they need not feel so threatened” (p. 95). Although there are many different definitions, in essence, Skinner and Wellborn (1994) maintain that coping is a construct used to explain the way in which people regulate their own emotions, behaviour, and outlook under psychologically stressful conditions.

Coping responses can vary greatly. Some have referred to different individual coping styles, but Skinner and Wellborn (1994) argue that it is more appropriate to frame these in terms of different patterns of coping responses. Some of the responses outlined in Skinner and Wellborn’s (1994) motivational theory of coping include help-seeking, avoidance, contact-seeking, aggression, negotiation and information-seeking.

Child Development and Coping

Children's coping with stress is influenced by their developmental level, which determines their ability to cognitively process an event and respond. For example, in Piaget's (1929, as cited in Siegel & Conte, 2001) preoperational stage of development (age 2-6), children have a different understanding of illness, and may think that invasive procedures are punishments (Edwards, 1999b).

Melamed & Siegel (1980) identify younger children as being particularly susceptible to emotional and behavioural problems associated with hospitalisation (as cited in Siegel & Conte, 2001). Young children's difficulties with understanding the concept of illness may lead to heightened anxiety and fear (Siegel & Smith, 1991, as cited in Siegel & Conte, 2001).

The Parents' Role in Child Coping

Young children depend upon parents to provide coping resources for them, in the form of a secure attachment (Peterson, 1989). Skinner & Wellborn (1994) assert that "close relationships are seen as critical to whether children's needs are met and hence to the development of their coping" (p. 92). Therefore, supporting children's relationships with their family members while in hospital should promote coping with the stressors and anxieties presented in the environment. Siegel & Conte (2001) report studies where information about medical procedures and routines provided to mothers led to a reduction in maternal stress and in children's emotional distress (Skipper & Leonard, 1968; Skipper, Leonard & Rhymes, 1968, as cited in Siegel & Conte, 2001). Supporting and preparing parents of hospitalised children, therefore, can help facilitate children's adaptive

coping. Skipper & Leonard (1968) note that reductions in parental distress can indirectly affect social, psychological and physiological responses in their hospitalised child. A further consideration of the impact that preparation of parents may have upon their child's coping is the phenomenon of emotional contagion. Hatfield, Cacioppo, & Rapson (1994) explain that people have an automatic tendency to "mimic and synchronise facial expressions, vocalisations, postures, and movements with those of another person, and, consequently, to converge emotionally" (Hatfield, et al., 1992, pp. 153-154, as cited in Hatfield, et al., 1994). It thus follows that distress and anxiety experienced by parents can be transferred to the child. Addressing parent's fears may then in turn help alleviate children's anxiety.

Hospitals in both developed and developing countries claim to adopt a family-centred approach to paediatric care. However, it was found that in practice, this was not always the case (Shields, 2001). Family-centred care refers to the inclusion of families in planning their child's care, and supporting parents in their role as primary caregivers (Ayson, 2007). Shields maintains that parental involvement in their child's treatment and good communication between parents and staff are key to providing quality care for the hospitalised child.

Indeed, Kennedy, et al. (2004) discovered that hospitalised children showed more behavioural problems when families were less emotionally involved in their care. In their study, the parents of 210 hospitalised children from Hong Kong and China completed a Chinese version of the Child Behaviour Checklist and the Family Assessment Device to determine predictors of behavioural problems.

Facilitating Coping

Preparation programmes are often used to help children cope with hospitalisation, particularly in preparing children for surgery and invasive procedures. Siegel & Conte (2001) identify five main components to preparation programmes:

1. Providing information
2. Encouraging expression of emotions
3. Building trusting relationships between the patient and staff
4. Informing parents
5. Providing coping strategies for both children and their families.

In addition to preparation programmes, other strategies may further promote effective coping. Fernandez (1986) discusses the literature on cognitive coping strategies for pain. He states that psychological factors such as anxiety and perceived control can have a considerable impact upon pain. Addressing these psychological factors through cognitive strategies such as imagery and attention distraction can help alleviate the experience of pain.

Distraction is used to redirect attention away from noxious stimuli. Because the perception of pain is in part controlled cognitively, then diverting attention with a distraction or imagery renders less attention available for perceiving pain (Kleiber, 2001). The findings from two meta-analyses (Broome, Lillis & Smith, 1989; Kleiber & Harper, 1999, as cited in Kleiber, 2001) show that the use of distraction techniques with children during medical procedures generally results in a reduction of observable behavioural distress.

Assisting children in coping with hospitalisation has become more prominent in hospital care, as a part of promoting psychosocial wellbeing. The last 50 years has seen a shift in paediatric care to give more emphasis to attending to children's psychosocial and emotional needs, as well as their physical needs (Ayson, 2007). Hospitalisation presents a wide range of situations that can elicit distress and anxiety in paediatric patients and their families, which can lead to impaired health outcomes for patients. Children's developmental level and the involvement of parents are important considerations in supporting coping through the development of appropriate programmes in the hospital environment.

Music Therapy in Hospitals

History of Music in Hospital Settings

Anecdotal evidence of music in hospitals supports the notion that it is generally viewed as something that enhances patient's quality of life while in hospital. In the popular magazine, *Readers' Digest*, a short article in a section entitled "Kindness of Strangers" by Cunningham (2007) tells of the positive impact of music on lightening patients' mood effected by a simple song performed by a health care assistant. While some may regard the concept of music in health care as relatively new, Pratt (1997) points out that music has been linked with healthcare practices dating as far back as the ancient Egyptians and Greeks, who incorporated chants, incantations, rhythm and other aspects of music in their healing practices.

Edwards (2008) outlines the history of music in health care from the 1890s through to the 1940s. She explains that music was used as therapy for injured US soldiers upon returning from the Second World War. This use of

music for medical and psychological treatment is now generally recognised as the beginnings of modern music therapy. Milford (1992) maintains that general interest in holistic health approaches is on the rise, and this provides opportunities for music therapy to expand in hospital and health contexts.

Research on the Use of Music Therapy in Hospitals

A summary of music therapy research in hospitals is provided by Maranto (1996). She states that in general, the research is often related to changes in pain and anxiety. The findings from research on the general effects of music therapy in hospitals show a reduction in pain and stress-related behaviour, positive increases in mood, and more verbal responses related to hospitalisation. Standley's (1986) comprehensive meta-analysis of music research in medical and dental settings found that for 54 of the 55 measured variables, medical goals (be they physiological, behavioural or psychological observations) were enhanced by music. These two studies provide analyses of a number of different research projects on music therapy, and through careful and methodical examination, the authors were able to reach these overarching conclusions. However, because the present research is concerned specifically with music therapy for hospitalised children, a more in-depth assessment of paediatric music therapy is merited.

Music Therapy in Paediatric Care

Music Therapy as a Brief Intervention

Paediatric settings, such as the one where the present research is based, often necessitate single-session interventions. Patients are generally relatively transient, and may only stay in the hospital for one or two days.

The brevity of a patient's stay has a considerable impact upon the way music therapy treatment is offered. The therapist is challenged to adapt the music therapy practice to offer single-session interventions accordingly. In many other music therapy settings, long-term approaches are more usual.

Rees (2005) provides thoughtful reflection upon two examples of her clinical work with young children who were terminally ill. She shows how, in only one session with each of the children, the time spent in the music therapy session elicited responses such as a smile or tapping of toes that took on great meaning for the families of these children. When their children were very ill, the smallest sign of connection with their environment and the people in it reminded them that their child was still present and with them.

In the midst of many painful and traumatic events, moments such as these became very special to these families. Rees explains that even when she wondered what she could offer in a time as brief as even 15 minutes, she felt that she had a job to do, and at the very least could give the child a musical experience. The encounters she discusses show that much can happen in a short space of time, within a single session with a patient.

Models of Paediatric Music Therapy

Edwards (1999b) outlines three different models of paediatric music therapy work. These three models are namely the Psychological Stress Model, the Developmental Model, and the Pain Management Model. In the psychological model, music therapy is used to address psychological stress by providing the child with familiar music to comfort, by offering opportunities to make choices and gain some control over their environment, by facilitating creative expression of emotions through music,

and by offering a relationship with an adult who is not connected with medical procedures (Edwards, 1999b).

The primary focus in the developmental model involves the consideration of the child's age and level of development. To highlight, one such consideration is related to working with preschool age children. Robb (1999), referring to Erikson's stages of psychosocial development, comments that it is normal for young children to experience separation anxiety when separated from a parent. Secure attachments with parents can help reduce the child's distress at separation. Music therapy can help support quality interactions between children and parents, encouraging secure attachments.

Finally, in the pain management model, music listening and activities can be practically applied to distract children from pain during medical procedures such as burns dressing changes (Edwards, 1999b). These three models encompass many of the goals that music therapy endeavours to address. Music therapy has been used to support development (Barrickman, 1989; Edwards, 1999b; Kennelly, 2000; McDonnell, 1984; Robb, 1999), provide opportunities for choice and control (Robb, 1999; Sheridan & McFerran, 2004; Wallace, 1996), distract patients during painful medical procedures (Edwards, 1999b; Edwards & Kennelly, 1999; Malone, 1996; Robb, 1999), assist pain management in other ways (Edwards, 1999c; Han, 1998; O'Callaghan & Colegrove, 1998; Perez, 1989; Pfaff, Smith, & Gowan, 1989), facilitate expression of emotion (Edwards, 1999b; Loveszy, 1991; Wallace, 1996) and address anxiety and fear (D. Aldridge, 1993; Barrera, Rykov, & Doyle, 2002; Loveszy, 1991; McDonnell, 1984; Micci, 1984; Preti &

Welch, 2004; Wallace, 1996). Literature pertaining to each of these six areas of music therapy application is detailed here.

Supporting Development

Music therapy can support children's cognitive, motor, language and social development in the hospital. Music is a typical part of children's normal development, and therefore musical activities can be used in music therapy to promote normalisation in the hospital environment (Barrickman, 1989). This is particularly important for children who may be repeatedly hospitalised, or admitted for long periods of time. Edwards (1999b) notes that music therapy can be used to support development in three different ways: to assess, assist and understand.

Some of the ways that music therapy can support a child's development in hospital are outlined by Kennelly (2000). She states that music therapy can help children with speech, language and communication skills, sensory and motor skills, social skills, gross motor skills and fine motor skills. Assistance in achieving developmental milestones may be particularly important for hospitalised children as their development can be impeded both by the experience of hospitalisation and as an aspect of their illness or disability.

O'Neill & Pavlicevic (2003) interviewed a child, her mother and hospital staff to determine the psychosocial needs of children and to discover views on the experience of music therapy. From these interviews, they determined that the overall need expressed was normality. The importance of normalisation for supporting development in hospitalised

children has been highlighted by Barrickman (1989) and Knafl, Deatrck, & Kirby (2001).

Music therapy can engender interactive and social experiences, allowing the child to experience pleasure and a sense of agency. O'Neill and Pavlicevic (2003) observed that some of the patients with lengthy admissions were delayed in reaching developmental milestones, and they also commented that some patients may regress. They give an example from the clinical records that a 3-year-old patient was unable to crawl or walk. This was deemed to be partly due to his medication, but they also acknowledged that the impact of hospitalisation was likely to have contributed to his delayed development.

Music therapy work with hospitalised children can be framed in developmental psychology theories, such as Piaget's theory of cognitive development and Erikson's stages of psychosocial development (Robb, 1999). For example, Erikson's second stage of psychosocial development is characterised by a dichotomy between autonomy versus shame and doubt. Children in this stage (typically aged 1 to 2) begin to acquire skills such as toileting, dressing and feeding themselves. Opportunities for children to assert their autonomy and practice recently acquired skills may be lacking in the hospital environment, yet these are considered important for the development of the child at this age.

Providing Opportunities for Choice and Control

Hospitalisation inevitably leads to fewer opportunities for the child to exert control over their environment, which may foster feelings of helplessness. Enabling children to make choices during music therapy

activities helps them gain a sense of control and independence (Robb, 1999). Opportunities in a music therapy session might include choosing whether or not to engage in music therapy, choosing instruments to play and deciding how to play them, selecting songs, and controlling musical elements such as rhythm, tempo, dynamics and melodic contours in improvisations.

Sheridan & McFerran (2004) explore the opportunities provided for choice and control in music therapy with a paediatric hospice clientele. These opportunities are exemplified through recounting three case vignettes. They discuss the way choice and control can reinstate a sense of “empowerment” for the individual through concentrating on a patient’s abilities and their potential for wellness rather than focusing on their illness and incapacities.

Distraction

Distraction techniques are specifically aimed at removing the patient’s focus from their illness. Kleiber (2001) lists 29 different distraction techniques (for example storytelling, blowing bubbles, finger games, puppets) and indicates which age groups are appropriate for each. It is noteworthy that music is the only technique in the list that is considered appropriate for all ages from infants through to adolescents. Robb (1999) discusses the use of “active engagement” as a coping strategy. When a child is undergoing a painful or distressing medical procedure, music therapy can be used to engage the patient in familiar songs and activities that focus attention and welcome active participation.

The provision of music before, during, and after a medical procedure is able to distract the patient from the procedure, support the child and assist with pain management (Edwards & Kennelly, 1999). Spending time with the patient and family before the procedure can help the therapist to ascertain the child's musical preferences and build rapport before the commencement of the procedure. Edwards (1999b) points out that singing and music listening have been shown to benefit children by distracting from pain, even when employed by non-music therapists (Fowler-Kerry & Ramsay-Lander, 1990, cited in Edwards, 1999b).

Research carried out by Malone (1996) sought to assess the effect of live music on levels of behavioural distress in paediatric patients receiving needle insertions. Forty patients, aged 0 to 7, received intravenous lines, injections, venipunctures or infant heel sticks. All of these procedures involve the insertion of a needle. Patients underwent these procedures in a private treatment room either on the children's ward or in the Emergency Room. The music therapist sang age-appropriate children's songs and accompanied on guitar for 20 of the patients. The other 20 patients served as a control group and did not receive music therapy.

Behavioural distress was measured through an analysis of video recordings of the patients during the needle insertions, with an observation scale and an adaptation of the Behaviors Category List used to interpret observed behaviour. Overall, Malone found a significant difference between the music therapy group and the no-music control group, with those who received music therapy exhibiting less behavioural distress for pre-needle and post-needle stages. A further analysis examining this effect by taking

into account different age groups, revealed significant reductions in behavioural distress, particularly in the music condition for infants aged 1 and below.

An experimental study was conducted to assess the effects of music therapy not only on behavioural distress, but also on psychological and physical correlates of pain and anxiety in 14 paediatric burns patients (Whitehead-Pleaux, Baryza, & Sheridan, 2006). Patients were aged between 6 and 16, and were divided into two groups: 8 patients were assigned to the music therapy condition and 6 were assigned to a control group. For those in the experimental group, the music therapist sang requested songs with guitar accompaniment, and improvised songs with lyrics that supported the child (for example, "you're doing great") during the patient's dressing change. For those in the control condition, the music therapist accompanied the child to the treatment room and engaged them in conversation, providing verbal support and talking with the patient about their interests. Self-report measures of fear and pain and physiological measures of respiration and heart rate were used before and after treatment, along with the Nursing Assessment of Pain Intensity (NAPI), which provided behavioural measures of distress. The results were mixed, but suggested that music helped reduce fear in patients. In addition to this, heart rates decreased significantly more in the patients who received music therapy, compared with those who received verbal support.

Other Forms of Pain Management

Music therapy can also be used to help children manage pain through the use of relaxation to music and the use of music to provide support,

security and comfort (Edwards & Kennelly, 1999). Edwards (1999c) describes the way music is thought to reduce the perception of pain. She explains that biochemical theory draws on knowledge that a pleasurable music listening experience can bring about a release in endorphins. Endorphins act as a natural opiate, and their presence has been used to explain a decrease in pain experienced by the individual when music is played.

Being in pain can cause a patient considerable anxiety, which in turn can lead to tension in the muscles. This tension is then relayed to increased pain, resulting in a vicious cycle. The use of relaxation techniques aims to break this cycle by allowing the tension in muscles to dissipate and blood to flow more freely (Han, 1998). Therefore music therapy sometimes involves the use of music as a relaxant to assist the patient with pain management. For those with the relevant training, Guided Imagery and Music (GIM, Bonny, 1983; as cited in Han, 1998) can be used to stimulate relaxation and reduce pain in adolescents. GIM involves a specific application of selected music recordings paired with therapist-led guidance through images brought to the patient's mind.

Lorenzato (2005) presents a case example of the use of guided imagery to help a teen oncology patient deal with pain and fear associated with the administering of chemotherapy drugs. This enabled the patient to remain calm during the procedure and keep herself still, whereas previously she had needed to be restrained by six medical staff.

Furthermore, a study on music-assisted relaxation for children with leukaemia was conducted by Pfaff, et al. (1989). Six patients between the

ages of 6 and 15 were observed during two bone marrow aspirations, the first without music therapy intervention, and the second with recorded music and relaxation exercises guided by the music therapist. While significant results were not obtained, there were trends suggesting music facilitated a decrease in experienced and self-reported fear and pain. Behavioural observations also showed trends in the direction of music intervention decreasing distress.

However, music therapy can have different roles and effects in various stages of the surgical process. Taylor (1997) delineates four stages of surgery; the preoperative stage, the moments immediately prior to surgery, during surgery itself, and the postoperative stage. Analysis of the way music therapy may be used in each of these stages was presented in a paper at the Seventh World Congress of Music Therapy (Puppo, 1993, as cited in Taylor, 1997). In the preoperative stage, Puppo proposed that music could reduce anxiety, facilitate relaxation, increase pain tolerance, balance internal rhythm, demystify surgery and psychologically prepare the patient for anaesthesia and surgery. Immediately prior to surgery, music was suggested to alleviate tension in the muscles and regulate physiological responses in pulse, body temperature and blood pressure, enabling anaesthesia to be received more effectively by the body thus reducing the amount required. During the course of the operation, music was thought to assist the patient by masking the sounds in the operating theatre, including the noises produced by equipment and instruments as well as conversations among members of the surgical team. Following surgery, in the postoperative recovery stage, music was believed to ameliorate recovery

through positive effects on homeostasis maintenance (physiological maintenance of internal equilibrium) and reactions following shock.

Taylor (1997) also describes a paper presented by Alain Carre at the Seventh World Congress of Music Therapy in 1993. This paper too outlined research in a paediatric facility noting the analgesic effects of music. However, the type of music experience offered to patients is not explained. When patients were subjected to music, the quantity of anaesthetic used during surgery reduced by approximately 32% and postoperative pain was less marked, or sometimes absent. Additionally, Carre argued that music could have a positive effect on the hospital staff. The atmosphere may become more pleasant and relaxed, and staff morale and productivity increased.

Music therapy improvisations can help children process both pain and emotions immediately following treatment. Turry (1999) provides a case example of an 8-year-old boy who had just undergone a needle stick procedure. It had taken 12 attempts to find a viable vein, and the child was in pain and traumatised. The therapist and patient improvised a 12-bar blues song about the procedure; role-playing the parts of the patient, nurse, and doctor, with the aid of a medical play doll. Through music, the patient was able to minimise the pain of the experience, but also acknowledge what he had gone through.

Five types of music therapy pain intervention are discussed by Loewy (1999). In addition to distraction, relaxation and sedation, and music to comfort and soothe, she describes vibration/toning, and release.

Vibration/toning involves the use of vibrating instruments such as body

gongs; tone bars and chimes resonating at particular loci of the patient's body such as the head, abdomen and lower body. The patient engages in deep breathing, muscle relaxation and vocalisation at intervals of a third or fifth from the tonic note. It is thought that this process can assist patients by evoking a sense of balance and facilitating a shift in energy.

Loewy's (1999) description of release involves the music therapist providing a safe and contained environment for the expression of pain. Loewy recommends the use of hand drums such as African djembe for this work. Through drumming, the patient can express themselves, their pain and anger, releasing built-up tension, which in turn may provide pain alleviation. It seems that the experience of pain is closely tied in with emotional responses. Music therapy can also be used as an outlet for patients to express their feelings, and can assist in reducing fear and anxiety.

Facilitating Emotional Expression

A paediatric patient's quality of life can be improved by the inclusion of music therapy. Not only is it able to provide comfort, distract, encourage socialisation, but it may also present as an outlet for emotional expression that may not be possible elsewhere in the hospital (Lathom-Radocy, 2002).

Robb (2003) explains how music therapy can help alter patients' emotional states, along with behavioural, attentional and physiological states. Facilitating regulation of these states in turn may promote coping with stress. "...Music functions to modify a child's attentional focus, mood state, and arousal levels. It is hypothesized that by helping children to more effectively regulate their mood and arousal levels, they are able to become

more actively engaged in their environment, exercise attentional control, and in turn experience more effective self-regulation” (p. 121).

Rudenberg & Royka (1989) outline the various emotional responses commonly observed at different stages of recovery for paediatric burns patients. For infants, they list protest, followed by despair, and finally, detachment. Protest involves crying and insisting upon the presence of the mother or caregiver. Despair involves the start of feelings of hopelessness, which may be fuelled by misunderstandings about illness, treatment and absence of parents. Lastly, detachment involves the child emotionally distancing themselves from others to prevent being further hurt. Rudenberg and Royka state that music therapists can help infants in these stages by holding and rocking them while singing lullabies, and encouraging parents to sing and interact with their child through playing vocal games and using toys.

The emotional responses of school-age children and adolescents are likely to be somewhat different. Rudenberg and Royka give Prugh’s (1979, as cited in Rudenberg & Royka, 1989) three stages of emotional responses for these ages groups. These are namely impact, recoil and restitution. Impact involves shock and disorientation, fears associated with mortality, denial, and possible regression. The music therapist can offer support to the patient and family through conversation, music-assisted relaxation, and distraction or reality orientation. Recoil, the second stage, involves grieving over the loss of self and viewing illness as a punishment. Choice and control are important in this stage to help the child overcome feelings of helplessness. Rudenberg and Royka recommend instrumental, vocal and

movement improvisations, discussion of lyrics, and songwriting. The final stage, restitution, involves acceptance of the changes to oneself and the development of adaptive coping responses. In this stage, interaction with others is emphasised. The same types of activities are used as in the previous stage, but the focus is on encouraging independence, and dealing with feelings around returning home and going back to school (Rudenberg & Royka, 1989).

Children may experience a wide range of emotions while in hospital. In an examination of the use of toys in music therapy for paediatric orthopaedic patients, Wallace (1996) makes a précis of the emotions that children may experience. The emotions she identifies include anger, fear and anxiety, fear of pain, guilt for becoming ill, and boredom. She discusses the ways that toys and puppets used within music therapy can help the child to express their emotions, as the patient can project their feelings onto the toy. This can allow the child to act out or say things that may otherwise be difficult to do or say.

However, it may not always be easy to identify these emotions. One goal that Perez (1989) highlights in work with hospitalised children is understanding contradictory emotions. As part of this goal, she notes that intense feelings can bring about conflicts and confusion. She argues that improvisation, song parody, listening and playing/singing to recorded music, and movement to music can help the child to regain the balance between feeling and thinking, and assist in helping to understand contradicting emotions.

In an account of music therapy in paediatric burns care, Neugebauer and Neugebauer (2003) discuss the effects of trauma on the patient. Flat affect can be symptomatic of the impact of trauma on the child. Engaging the child in musical play and using therapeutic songwriting are two techniques that Neugebauer and Neugebauer recognise as useful for helping the child recover emotionally.

Several case studies appear in music therapy literature that demonstrate how music therapy helped children express themselves. Loveszy's (1991) account of her work with Eduardo, a young boy who had severe burns, focuses strongly on his emotional wellbeing and the use of music therapy to enable him to express his feelings. The use of familiar songs and styles of music from his native Honduras brought back memories for this boy, displaced from his home for treatment and with little understanding of English. The initial song sung by the music therapist "Las mananitas" elicited a smile, while he became tearful when she sang another song about a butterfly. When asked about his reaction, he said he had sung it with his sister, who had died in the same fire that caused his burns.

Further into the music therapy programme, Eduardo liked to imagine he was a lion and roared to vent his anger and frustration. A particularly poignant session commenced with Eduardo asking to write a song. He took a drum and, banging with energy, began to shout out the story of how he and his sister had been playing with matches and how he had burned himself and killed his sister. The song concluded with Eduardo breaking down into tears. Up until this point, almost 3 years after the fire, he had not been able to tell anybody about what had happened. Loveszy states that through this

experience Eduardo was able to finally mourn for his sister and begin to emotionally heal.

Kennelly (1999) presents a case study of her work with a teenage cancer patient, detailing the emotional journey he took in music therapy. Writing songs and improvising allowed the patient to gain emotional support from others through sharing his songs with them. He was able to explore themes about life and mortality, and reflect in his improvisations his feelings of being 'stuck.' Through this period, he established a trusting relationship with the music therapist and was able to open up to her emotionally whereas he was unable to with others. This demonstrates the importance not only of the music, but also of the therapeutic relationship between the patient and therapist in facilitating the patient to freely express emotions.

Music therapy has been shown to not only allow for emotional expression, but to also alter patients' mood. It was hypothesised by Hendon & Bohon (2008) that there may be a difference in children's mood in play and music therapy. They observed 60 children engaged in play or participating in music therapy groups and coded the number of smiles exhibited by the patients in 3-minute blocks. The results showed that children smiled, on average, approximately twice as often in music therapy compared with play. These findings demonstrate the value of music therapy for increasing positive affect in hospitalised children.

The impact of hospitalisation can bring about a wide range of emotions in the patient. However, research has shown that the stress related with hospitalisation often leads to feelings of distress, anxiety and

fear (as described earlier). Because of the considerable impact these feelings can have upon a child's health and wellbeing in hospital, these emotions are examined more closely with regard to music therapy literature.

Addressing Anxiety and Fear

Music therapy can be used to manage anxiety in hospitalised children through promoting coping (Edwards, 1999a). Edwards (1999c) states that music therapy can help children manage feelings of anxiety and the manifestations of this (such as withdrawal, developmental regression and aggression) by concentrating on giving children opportunities to feel a sense of control, skill mastery and capability. Barrera, et al. (2002) posited that engaging children in interactive music therapy could decrease distress and increase their play through the elicitation of positive emotions.

Family music therapy sessions can help children with their anxiety and fear by creating an enjoyable atmosphere and allowing parents to gain some respite and replenish their resources. The resulting reduction in parents' stress levels reassures the child and in turn helps to reduce their own feelings of anxiety (McDonnell, 1984).

Sometimes children will have specific fears that can be addressed in music therapy. Micci's (1984) paper on paediatric music therapy discusses music techniques developed to assist children undergoing cardiac catheterisation. One particular fear she identifies, that was common in young boys, was the fear of castration. Micci describes the process of selecting familiar recorded music and relaxing music to be played during the procedure. She states that familiar music can help relieve anxiety by serving as a "transitional object" (Winnicott, 1953, as cited in Micci, 1984).

Transitional objects (such as a favourite toy or a blanket) provide security, act as a defence against anxiety and help the child to go to sleep (Micci, 1984).

Addressing anxiety in a more general way, children waiting for medical procedures can benefit from group music therapy. K. Aldridge (1993) reports that the use of music therapy group sessions for children waiting for day surgery reduced anxiety. Aldridge describes a music therapy program where children receive a half hour group music therapy session while they wait for surgery. The sessions involved singing familiar songs, action songs and instrumental play.

In Aldridge's study, parents were given questionnaires to determine the effect of music therapy on their perception of the atmosphere in the waiting area and on their child's anxiety. The parents all reported that the atmosphere was comfortable following music therapy, whereas prior to music therapy, some parents had felt the atmosphere was tense or uncomfortable. Parents also reported a decrease in anxiety in their children following music therapy. Prior to music therapy, most parents felt their child was a little anxious. Following music therapy, most parents felt their child was no longer anxious.

A similar programme, named "Surgery Buddies" was developed to provide music activities for children, families and staff who were waiting for surgery (Whipple, 2003). The programme was designed to reduce the opportunities in which anxiety could develop just before surgery. The programme was implemented using familiar music and pairing music with guided imagery and verbal associations. The outcomes from "Surgery

Buddies” included the relief of parental anxiety, assistance for hospital staff with medical procedures, and help for children to cope with the stress of hospitalisation.

Chetta's (1981) research also examined the effects of music therapy on children's anxiety while waiting for surgery. Seventy-five children were divided into three groups: a control group who received verbal preoperative preparation the night before surgery, an experimental group who received these verbal instructions as well as relevant songs that reiterated the verbal information provided, and a second experimental group who received the same preparation as the first experimental group but additionally received a music therapy session immediately prior to preoperative medication being administered on the day of surgery. Chetta found that this second experimental group, who received additional music prior to surgery, exhibited less observable signs of anxiety than children in the other two groups.

A Music Assisted Relaxation (MAR) programme for older paediatric burns patients (aged 8 to 20) involved measuring anxiety levels in a pre-operational period, using the state section of the State-Trait Anxiety Index for Children (STAIC), collecting feedback from patients and staff, and measuring physiological responses (Robb, Nichols, Rutan, Bishop, & Parker, 1995). The MAR programme involved music listening muscle relaxation techniques, deep breathing and imagery. Patients who received MAR showed a significant decrease in state anxiety scores while control patients, who received standard preoperational preparation, showed no decrease in anxiety. No difference was found in physiological measures, but comments

from patient questionnaires indicated a positive response to the MAR intervention.

As previously stated, separation from parents is a source of anxiety that can be exacerbated by hospitalisation. Children as young as 2 months old can distinguish between their parents and others (Marley, 1996). Infants at 6 months have been observed to become distressed when separated from their mothers, with children aged 1 to 3 displaying the greatest amount of separation anxiety (Marley, 1996).

A case study presented by Perez (1989) discusses the separation anxiety experienced by a young 5-year-old boy, Martin. Music therapy sessions typically occurred when his mother was not present. Because of his extreme anxiety, it was initially difficult to engage with Martin. However, when the music therapist began improvising a song in the style of a 'spiritual', Martin quickly engaged in singing a song and 'drumming' upon his legs. Later, it was discovered that Martin's grandmother used to sing with him, and this experience in music therapy helped him to remember his grandmother and feel reassured.

Another specific source of anxiety that children may experience in hospital is fear associated with drug-induced hallucinations (Fagen, 1982). Fagen encourages willing patients to musically explore their hallucinations. She maintains that the use of instruments and voice enable the patient to emphasise and embellish upon their images with sound effects, which is then followed by verbal processing of the experience. Fagen reports that hallucinations often cease after they have been musically and verbally explored. The hallucinations can be identified as products of one's own

imagination, rather than an external force, and therefore appear less frightening.

Patients can also experience frightening fantasies and thoughts, which are not hallucinations from drug treatment. Brodsky (1989) notes that children may not feel comfortable expressing fears about death and dying to doctors and nurses. He asserts that the therapeutic relationship between the patient and music therapist can provide the child with an outlet to express these fears and anxieties. Turry (1999) claims that clinical improvisation is a particularly powerful technique in assisting children with serious disorders to work through their fears and anxieties. The therapist takes cues from the child's music, behaviour, speech and emotions to create a musical connection and establish rapport.

There may be inherent qualities present in some music that renders it particularly suitable for alleviating anxiety and distress. Anxiolytic music is music that is believed to contain specific qualities that assist in anxiety reduction (Taylor, 1997). This music is characteristically non-invasive and does not interfere with medical procedures. A multimodal system has been developed to monitor the effects of music on emotion (Spintge & Droh, as cited in Taylor, 1997). This complex system of measuring physiological responses, verbal content and psychological and cognitive responses has demonstrated that music can have a therapeutic impact on all modalities involved in expressing emotion. Taylor notes that music that is gentle, quiet, and has a steady rhythm (such as some classical music or lullabies) is often selected for managing anxiety in infants. Preti & Welch (2004) state that the "sonic features" of music bring about certain emotional responses. Music

can be used to uplift an individual, to calm them, to create excitement and to soothe. Different tempi, pitches, timbres, dynamics and articulation can be utilised to invoke these feelings.

Research into the effects of music on post-operative analgesia has shown that music listening can reduce anxiety in patients following foot surgery (MacDonald, et al., 1999). Listening to preferred music following surgery reduced anxiety as measured by the Spielberger State Trait Anxiety Inventory (STAI) and the McGill Pain Questionnaire. Although this research was conducted with adult patients and utilised receptive listening to recorded music rather than live music making or listening, it still provides evidence that music can be an effective treatment for reducing anxiety levels in hospital patients.

Anxiety may be particularly important to address in hospital settings, as it may be provoked not only by hospitalisation and the hospital environment, but also by the experience of pain. Whitehead-Pleaux, et al. (2006) note that there is a bidirectional relationship between pain and anxiety. Their study, mentioned earlier, included measures of children's behavioural distress, pain and anxiety. The results suggest that the music therapy intervention may have helped to decrease anxiety levels in patients.

It might be particularly important to focus on non-medicinal treatments for pain and fear, as drugs are typically administered to treat pain alone. When fear accompanies pain, the feelings can overwhelm the action of the drugs so that they do not work as efficiently as they should (Lorenzato, 2005). Lorenzato states that it is fairly common that a child's fear of an impending medical procedure prevents their pre-medication from

working. Both pain and anxiety are commonly assessed in various ways in paediatric settings. One of the ways staff can assess children's self-reported feelings of pain or anxiety is through the use of facial scales.

Facial Scales

It is common in paediatrics to use rating scales and facial scales to measure pain and distress. This information is useful for making diagnoses and formulating interventions (Carr, Lemanek, & Armstrong, 1998) and for evaluating treatment (Loewy, 1999). Scales such as the Wong-Baker FACES Pain Rating Scale (Wong & Baker, 1988, as cited in Chambers, Giesbrecht, Craig, Bennett, & Huntsman, 1999) are often used to determine children's self-reported levels of pain. In the setting where the present research took place, the Wong-Baker scale was used by some nursing staff to assess pain intensity. This scale consists of six hand-drawn faces, showing expressions ranging from crying to smiling to show different levels of 'hurt' (Chambers, et al., 1999).

The Affective Facial Scale (McGrath, 1990) differs from the Wong-Baker FACES Pain Rating Scale (Wong & Baker, 1988, as cited in Chambers, et al., 1999), as it is intended to measure affect rather than pain intensity (Chambers, et al., 1999). Facial Scales have been used in a few music therapy research projects although most of these have involved assessment of pain intensity rather than affect. Loewy (1999) describes several different measures that can be used in the hospital to determine pain levels, one of which is the Wong-Baker FACES Pain Rating Scale (Wong & Baker, 1988, as cited in Loewy, 1999). She determines that assessment of pain is useful for music therapy, and that the music therapy session can be specifically

tailored to address both the physical aspects of pain and the related emotions.

The Wong-Baker FACES Pain Rating Scale was used in the randomised control study conducted by Whitehead-Pleaux, et al. (2006). (This study has already been mentioned with regard to behavioural distress and distraction, and the use of music therapy to reduce anxiety). Pain was assessed before, during and after the interventions with the facial scale. Physiological measures, behavioural coding and the Fear Thermometer (Silverman, Saavedra, & Pina, 2001, as cited in Whitehead-Pleaux, et al., 2006) were also used to determine pain, distress and anxiety before, during and after the interventions. With regard to the Wong-Baker scale, no significant difference between music therapy and verbal support groups was found. However, results from the other measures give some evidence for the reduction of anxiety with the use of music therapy.

Barrera, et al. (2002) assessed pain with the FACES pain scale (Bieri, Reeve, Champion, Addicoat & Ziegler, 1990, as cited in Barrera, et al., 2002) to examine the effects of music therapy for children in hospital with cancer. Additional measures from parents were used to rate their child's play performance and to indicate their levels of satisfaction. Children and staff also were asked to indicate their satisfaction with music therapy. The 65 children gave indications on the facial scale before and after music therapy sessions, while the other measures were given at the conclusion of the music therapy session.

The results showed a significant decrease in reported pain on the FACES scale after music therapy compared with initial measurements. It

was also noted that more actively engaged children reported higher scores on these scales than the more passive children. Parents perceived an improvement in their child's play performance (for adolescents and pre-school children but not school-age children) after the music therapy session compared with their impression of the child's play performance during the previous week. Comments from parents and children showed that music therapy was perceived as having positive effects.

Similarly, Pfaff, et al.'s (1989) study used a facial scale to determine self-reported indices of pain in hospitalised child cancer patients. (Details of this study are given earlier in the literature on other forms of pain management). The scales used were the Faces Scale for Pain and the Faces Scale for Fear (Katz, Kellerman & Siegel, 1982, as cited in Pfaff, et al., 1989). Behavioural observations were also used. Each scale consisted of 5 faces. The pain scale ranged from "will not/did not hurt" to "will/did hurt very, very much", while the fear scale ranged from "not at all scared" to "very, very scared." The findings from the faces scales revealed trends for reduction of fear (both anticipatory and experienced) and of experienced pain in the music assisted relaxation condition compared with the baseline condition. Trends were also present for a reduction in anticipatory behavioural distress.

McGrath's (1990) Affective Facial Scale has been used in music therapy research (Robb, 2000). Robb was interested in testing hypotheses related to Skinner & Wellborn's (1994) motivational theory of coping. The participants were 10 cancer patients in isolation rooms in hospital, ranging in age from 4 to 11. There were four conditions that each patient

experienced, a control condition (A), a reading condition (B), a music condition (C), and a final control condition (A), each lasting 15 minutes, that is, an ABCA design. The hour was video recorded for later observational analysis of behaviour. The Affective Facial Scale was presented to patients at the beginning of the first control condition, then at the changeover to the reading condition, at the changeover to the music condition, at the changeover to the control condition and finally, at the end of the second control condition.

The control conditions consisted of activities such as watching TV, playing videogames, playing with toys, engaging in arts and crafts activities, and having short medical procedures such as checking temperature. The researcher was not present in the room during these conditions. In the reading condition, the researcher and child listened to an audio book together and looked at the accompanying printed book. The music condition involved music activities that were age-appropriate, including greetings, instrumental play, action songs (for younger participants), and closing.

The results from Robb's study demonstrated that the music therapy condition was more environmentally supportive, and elicited a significantly greater number of engaging behaviours compared with the other activities. The positive behavioural effects of music therapy did not seem to flow over to the final control condition however. While demonstrable differences were found with the behavioural measures, the Affective Facial Scale did not reveal significant differences between conditions. However, a relatively small number of patients were used in this study, and 2 of the 10 patients displayed signs of anxiety in response to the request to indicate their

feelings on the scale, which may have contributed to the lack of significant effects. While these results might have discouraged one from using this facial scale, it is important to consider that this is only one study, and further music therapy research, perhaps using larger numbers of patients, might produce different results.

The Present Research

Hospitalisation is widely regarded as a stressful experience, which can result in anxiety and negative affect (Harbeck-Weber & McKee, 1995; Peebles-Kleiger, 2000; Petrillo & Sanger, 1980). Moreover, this psychological stress can lead to poorer physical health and longer hospital admissions (Lepore, et al., 1997; Rozanski & Kubzansky, 2005). Therefore, interventions to promote coping with stress, anxiety and pain are warranted, and are indeed considered important. The MTS sought to analyse the role that music therapy might play in helping children cope by examining their self-reported affective ratings before and after music therapy sessions. While some research identifies younger children as being particularly sensitive to negative effects of hospitalisation (Melamed & Siegel, 1980), the MTS worked with children of all ages, based on their needs, availability, and willingness to participate in music therapy. Many of the patients involved in music therapy tended to be under 10 years old. Children under the age of 3 were not asked to indicate their mood on the facial scale, and therefore were not included in the research sample. However, the MTS worked with a number of very young children from infants a few weeks old through to toddlers and preschoolers.

Facial scales are commonly used in paediatric settings, and were considered to be appropriate measures for evaluating clinical practice. However, only a few music therapy studies in this area have utilised them. Moreover, the majority of this research used facial scales for self-reported ratings of pain, rather than for emotion. The present study aimed to add to this body of literature by examining clinical data which measured the emotion experienced by hospitalised children, which is impacted by patients' pain, stress, and coping abilities.

McGrath's (1990) Affective Facial Scale was used in the MTS's clinical work as an indicator of children's mood pre- and post-music therapy. The data were collected to add to the clinical picture of individual patients.

Hypothesis

It was thought that music therapy would ameliorate the negative emotions that children experience from pain and the stress of hospitalisation. Therefore, it was hypothesised that music therapy would improve affect in hospitalised children. It was predicted that post-music therapy measures on the Affective Facial Scale would be higher than the scores obtained at the beginning of the music therapy sessions. It was hypothesised that pooling the data would help determine the effectiveness of the overall programme. The independent variable is music therapy over time, with two levels: at the beginning of the music therapy session, and at the end of the session; and the dependent variable is affect as measured by McGrath's (1990) Affective Facial Scale. Qualitative information from clinical notes is also used to support discussion points.

Method

Design

This was a quantitative study using pre- and post- measures. The data included Affective Facial Scale measurements (McGrath, 1990), taken at the beginning and end of Music Therapy sessions. These have been used throughout the year as a clinical tool to inform the MTS and hospital staff of children's affect pre- and post-Music Therapy.

However, qualitative data from clinical music therapy records were also used in the research to support the quantitative data. Wheeler (2005) explains the way qualitative techniques can be incorporated into quantitative research and vice versa. "A number of music therapy researchers have combined quantitative and qualitative techniques. Many of these studies are conducted primarily within one method, but incorporate elements of the other, often to provide additional information on the topic under study" (p. 47). Indeed, the inclusion of qualitative material has been used in this study to expound upon factors that may have influenced children's decisions when indicating their mood on McGrath's (1990) Affective Facial Scale.

The research involved a clinical audit of data from music therapy sessions held on the paediatric ward of a local hospital. The MTS worked 3 days per week on the children's ward, facilitating both individual and group music therapy sessions with patients and their families. The audit covers a 7-month period of music therapy sessions.

Sample

The audit data for the present research included 84 before and after measures of data (one pair of before and after measures per patient). These patients ranged in age from 3 to 14 with a mean age of 8.25. There were 55 males and 29 females, representing a number of ethnicities including Maori, Pacific Islander, New Zealand European, British, Chinese, African and Middle Eastern. The patients mostly came from the lower north island, although some patients from the upper to mid- south island travelled for specialised procedures.

The reasons for hospitalisation were diverse – the children’s ward accommodates medical, orthopaedic, burns and plastics and surgical patients. The size of the sample was the number of patients seen in the 7-month period of music therapy work on the children’s ward, excluding any incomplete data, and children who refused or were unable to provide the data at that time. There are instances where the self-report mood measures were inappropriate for the circumstances surrounding the music therapy session, the sessions were very brief (less than 10 minutes), the patient was outside the age range or developmental level appropriate for the measure, or other hospital events interfered.

Participants

The present research did not involve any participants per se. It is concerned with evaluating records of Music Therapy sessions held during the course of the year. This primarily involves analysing data from McGrath’s (1990) Affective Facial Scale, but qualitative data from the music

therapy clinical notes have also been examined for observations and comments to complement the quantitative findings.

Ethical Considerations

Prior to the commencement of the project, hospital permission was provided for the use of the 2008 Music Therapy records for the present study. A research proposal was sent to the chair of the Health and Disability Ethics Committee (HDEC), with an application for an expedited review of the project. The role of HDEC is to protect research participants by ensuring that harm and deception are kept to a minimum. Ethical approval was obtained from HDEC Central Regional Ethics Committee (Ref No: CEN/08/21/EXP). To protect patients, the name of the hospital and patient's real names are not included in this report. As this was an audit of hospital data, all music therapy records will remain at the facility.

Apparatus and Materials

Music Therapy Sessions

A client-centred approach to music therapy was adopted by the MTS. This approach provides the client with power to make decisions in the music therapy process. The therapist empathises and expresses genuine regard for the client, showing care and concern for the client's experiences and feelings (Wigram, Pedersen & Bonde, 2002). The therapist also drew upon the three models defined by Edwards (1999b), namely the Psychological Stress model, the Developmental Model, and the Pain Management model, described earlier. Emphasis was placed on providing opportunities for choice and control, expression of emotion, normalisation,

familiar music for comfort, supporting child-parent attachment through encouraging interaction, and providing distraction during procedures.

Each music therapy session was tailored to the needs, age, developmental level and musical preferences of the patients involved; with opportunities and invitation for patients to provide input into the music and activities undertaken. Music therapy sessions usually focused primarily on interactive music making, but some sessions, particularly with older children, concentrated on song writing where lyric-writing became a major focus. However, in all sessions where songs were written, the songs were performed either vocally or vocally with instruments, thus music-making remained an important part of the session.

In addition to song writing, techniques such as singing and playing familiar songs, improvisation, movement to music, song parody (writing new words to an existing song), lyric substitution (altering some lyrics of a pre-composed song), and creating musical stories, were frequently employed. The instruments available for use in the music therapy sessions included tuned and untuned percussion, guitars, flute and whistles. Sometimes the use of the piano in the hospital chapel was possible. Music therapy sessions took place on the children's ward, (unless using the piano in the chapel) either in the playroom or at patients' bedside.

Many of the sessions were single session interventions with patients, as hospital stay periods were typically quite short and it was not possible to see the patients again before discharge. However, there were a few patients hospitalised for several weeks, so these patients were seen on multiple occasions. Because the MTS worked 3 consecutive days at the facility, it was

possible to work with these patients semi-regularly. Music therapy sessions could be individual or group sessions (or sometimes a mixture of the two if others came and then subsequently left). Group sessions were often conducted in the playroom with an open group policy where patients and family members could join in and leave as desired. Music therapy sessions ranged in duration from 10 minutes to over an hour.

Affective Facial Scale

The Affective Facial Scale (McGrath, 1990) includes line drawings of six faces in a row, ranging from very upset to very happy (see Appendix A). On the far left is a very upset face, with two tears, tightly closed eyes, a wide-open mouth and distressed facial expression depicted by lines on forehead and around eyes. The next face along is illustrated with one tear, tightly closed eyes, a less open mouth and less forehead lines. The third face has no tears, open eyes, a slightly open mouth and lines on forehead and chin. The fourth face presents as neutral, with open eyes, a closed mouth and no lines on the forehead or chin. The fifth face from the left is very similar to the fourth face, but features a closed-mouth smile and a suggestion of smiling to the shape of the eyes. The sixth face, far right, is the happiest face with wide-open eyes and a large open-mouthed smile.

At the beginning and end of music therapy sessions, patients were asked by the MTS to indicate their mood on the scale, by pointing to the face that looked like the way they were feeling at that moment. These choices were marked on the scale below the appropriate face with a 'b' and an 'a' for the 'before' and 'after' measurements. After the music therapy session had

ended, the facial scale responses were attached to the written clinical notes from the session.

Clinical Notes

The clinical notes contained information about the timing of the music therapy session, the names, ages and diagnoses of patients, whether other family members and staff were present, the goals for the session, and the observations and thoughts of the MTS about what took place during the session. The type of observations and thoughts noted by the MTS included patients' preferences for various instruments, their apparent level of engagement, their musical responses regarding what, and how, they chose to play or sing, verbal interactions that seemed particularly meaningful, wonderings about interpretations of observed behaviour, and comments from parents and staff (see Appendix B for an example of clinical notes from a music therapy session).

Note was taken of information that may be important for other health professionals (such as presentation regarding diagnosis, any perceived developmental issues, relationship difficulties with family or behavioural problems) and these were written in the patient's file in their medical records.

Procedure and Data Collection

At the conclusion of the 7-month audit period, the before and after measurements from McGrath's (1990) Affective Facial Scale ratings were entered onto a computer for data analysis to take place, and clinical notes were assessed for comments and thoughts to support statistical data.

Affective Facial Scale

With regard to reliability and validity, good consistency was demonstrated between McGrath's Affective Facial Scale (1985, as cited in Chambers et al., 1999) and a visual analogue scale for various medical procedures (Chambers et al., 1999). This facial scale consisted of nine drawn faces ranging from very upset to very happy. Moderate correlations between the facial scale and behavioural measures were reported by Chambers et al. (1999). The present research used a 6-face version of McGrath's (1990) scale, where six of the original nine faces were used.

The facial scale data were coded by arbitrarily assigning numerical values, so that the saddest face was coded as a 1, through to the happiest face, coded as a 6. After incomplete facial scale data (where there was only one measurement) and inappropriate data (such as where a parent indicated a face on their child's behalf, the child was younger than 3 years old or the data was from a sibling or family member) were excluded, there were 84 pairs of data from the clinical records. These values were then entered into a spreadsheet in Microsoft Excel 2008 for Mac Version 12.1.3, such that the data remained paired as 'before' and 'after' for each individual. These data were then transferred to SPSS for Windows Version 12.0.1.

A Wilcoxon Signed Ranks Test was conducted to determine whether there were any significant differences in reported mood before and after Music Therapy sessions. Descriptive statistics were also obtained, including, mean, standard deviation, median, mode and frequencies. Frequencies of each response for before Music Therapy and after Music Therapy were displayed on bar graphs.

Clinical Notes

In addition to the affect ratings, other information from the clinical notes has been used for the purpose of drawing themes. The qualitative information from the clinical notes was obtained by reading through the session notes and highlighting relevant observations and comments. In-depth qualitative analysis of the clinical notes was beyond the scope and the ethical boundaries of this study, but material pertaining to mood or factors that could affect patient's mood or assessment of mood was noted for use in discussing and interpreting the findings from the Affective Facial Scale (McGrath, 1990).

Results

Eighty-four pairs of before and after facial scale data were collected. As described previously, the Affective Facial Scale (McGrath, 1990) used in this study consisted of six line drawings of faces, coded for statistical purposes from 1 (the saddest face) through to 6 (the happiest).

Statistical Tests

The statistical tests conducted with the Affective Facial Scale data include both descriptive and inferential statistics. Descriptive statistics provide mean responses on the facial scale before and after music therapy, with standard deviations. In addition, the median and mode for both before and after music therapy responses are reported. Frequencies of responses for each face both before and after music therapy are reported, with conversions to percentages and cumulative percentages also given. These descriptive statistics provide an overall image of the data and identify main characteristics of the sample (DeCuir, 2005).

Specifically, the median, mode and frequencies were reported, as the mean and standard deviation alone may not provide the most accurate picture of the data. In the present data, the median and mode are likely to be more important and meaningful than the mean and standard deviation, as the data are ordinal. Calculating means and standard deviations assumes that the distance from one ordinal data point to the next is equal for all points. However, this may not be the case. Essex-Sorlie (1995) states that, "for ordinal data, the most appropriate descriptive statistics are the count, mode, and median. Use of the mean and standard deviation for ordinal data is questionable, because the units on an ordinal scale are usually unequal."

(p. 41). For example, the size of the difference between a 3 and a 4 (that is, a somewhat upset-looking face and a neutral face) maybe perceived as greater or less than the size of the difference between a 5 and a 6 (a happy face, and the happiest face on the scale).

Indeed, McGrath produced a ratio scale for the faces through the use of cross-modality matching (Chambers, et al, 1999). The faces were given a rating between 0 to 1 where 0 represented the “happiest feeling possible” and 1 represented the “saddest feeling possible”. For the six faces used in the present research, the associated values (from happiest to saddest face) were .17, .47, .59, .79, .85 and .97 (McGrath, 1990). Therefore, the size of the difference between each face is not equal. The mean and standard deviation have been included here for completeness, but clearly caution must be taken in using them to draw any conclusions about the data.

A Wilcoxon Matched-Pairs Signed-Ranks Test was conducted to determine the significance of any difference in reported facial scale ratings between before and after music therapy conditions. The Wilcoxon Matched-Pairs Signed-Ranks Test is a nonparametric test which is appropriate for ordinal data such as that provided by the Affective Facial Scale (McGrath, 1990), and suited to making comparisons between pre-test and post-test scores (DeCuir, 2005).

Presentation of Results

Descriptive statistics in Table 1 show the average response and standard deviation for before and after music therapy along with the median and mode. From the table, one can see that the mean responses for before and after music therapy were 5.4167 and 5.2857 respectively, where

6 (the happiest face) is the maximum possible value. Furthermore, the median and mode are 6 in both the before and after music therapy conditions. The median shows that when all the responses are placed in order from lowest to highest, the number that falls in the middle is a 6. The mode is the most frequently selected response. Therefore of the six faces presented, patients most often indicated a 6 in both before and after music therapy conditions. The overall picture presents a negatively skewed distribution, where the majority of data lie towards the high end of the scale.

Table 1

Mean, standard deviation, median and mode responses on McGrath's (1990) Affective Facial Scale before and after the music therapy session

	Mean	SD ^a	Median	Mode
Before	5.4167	0.9341	6	6
After	5.2857	0.9515	6	6

Note. Mean values are the average of reported scores on a 6-point facial scale (1 = saddest, 6 = happiest).

^aStandard deviation.

Table 2 is solely concerned with the ratings provided by patients at the beginning of the music therapy session. Frequencies give the distribution of responses provided. As can be seen, the majority of responses occurred at the higher end of the scale. Indeed, responses for faces 1 – 5 only account for 36.90% of the responses, meaning that almost two thirds of the respondents selected the happiest face at the commencement of the session. When data for face 5 are added to those for face 6, these two faces together account for 84.53% of the total data.

Table 2

Frequency of responses for each face on McGrath's (1990) Affective Facial Scale before music therapy

Face	Frequency	Percent	Cumulative Percent
1	1	1.19	1.19
2	0	0.00	1.19
3	2	2.38	3.57
4	10	11.90	15.47
5	18	21.43	36.90
6	53	63.10	100.00

Note. Based on reported scores on a 6-point facial scale (1 = saddest, 6 = happiest).

Table 3 gives the frequencies for the ratings provided at the conclusion of the session. Again, the majority of responses occurred at the high end of the scale, with over half of the patients selecting the happiest face, and the two faces at the happy end of the scale accounting for 83.33% of all responses.

Table 3

Frequency of responses for each face on McGrath's (1990) Affective Facial Scale after music therapy

Face	Frequency	Percent	Cumulative Percent
1	1	1.19	1.19
2	0	0.00	1.19
3	3	3.57	4.76
4	10	11.90	16.66
5	26	30.95	47.61
6	44	52.38	99.99 ^a

Note. Based on reported scores on a 6-point facial scale (1 = saddest, 6 = happiest).

^aThe cumulative percentage adds to 99.99 due to rounding of decimals.

Visual representations of the frequencies of responses for each face are depicted in the bar graphs in Figures 1 and

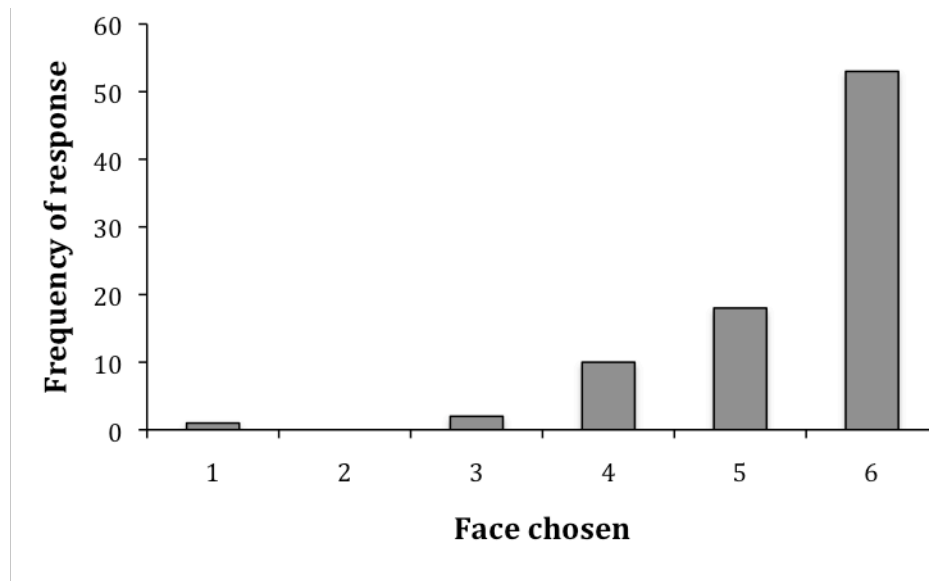


Figure 1. Bar graph depicting frequency of response for each face on McGrath's (1990) Affective Facial Scale before the music therapy session where 1 = saddest face, 6 = happiest face.

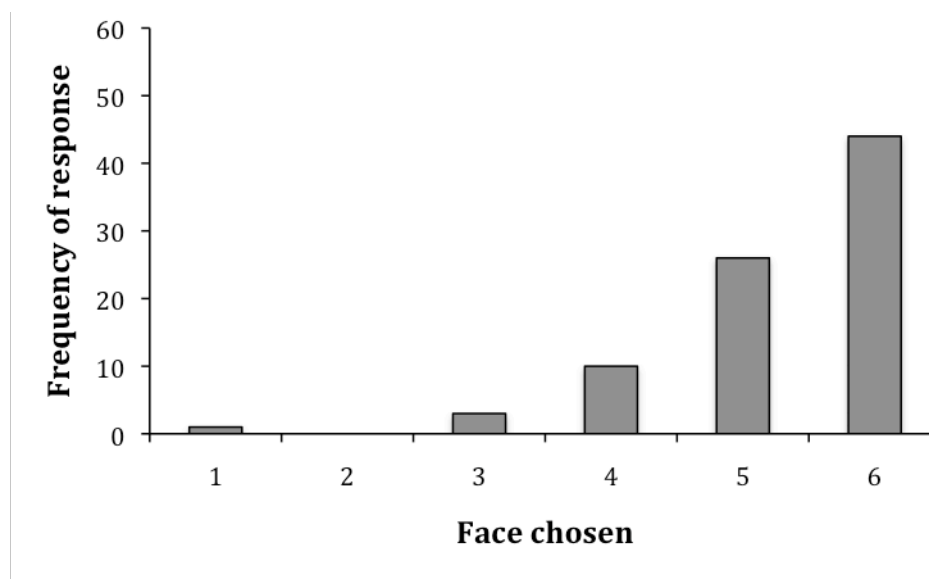


Figure 2. Bar graph depicting frequency of response for each face on McGrath's (1990) Affective Facial Scale after the music therapy session where 1 = saddest face, 6 = happiest face.

A Wilcoxon Matched-Pairs Signed-Ranks Test was conducted to determine whether a significant difference was present between the before

music therapy and after music therapy measures of mood. Before and after data were paired for each individual as the preliminary step of the analysis. Table 4 shows firstly the number of pairs where the after measurement was lower than the before measurement (that is, a sadder face was indicated at the end compared with that indicated at the beginning of the session), secondly the number of pairs where the after measurement was higher than the before measurement (that is, a happier face was indicated at the end compared with that indicated at the beginning of the session), and thirdly the number of instances where the before and after measurements were equal (that is, the same face was indicated both at the beginning and at the end of the music therapy session).

Table 4

Direction of change in responses on McGrath's (1990) Affective Facial Scale before and after music therapy

	Frequency	Percent
After < Before ^a	24	28.57
After > Before ^b	15	17.86
After = Before ^c	45	53.57

Note. Based on reported scores on a 6-point facial scale (1 = saddest, 6 = happiest).

^aFrequency of responses where the response after music therapy was lower than before music therapy, that is, a sadder face was selected at the end of the session compared with the beginning. ^bFrequency of responses where the response after music therapy was higher than before music therapy, that is, a happier face was selected at the end of the session compared with the beginning. ^cFrequency of responses where the response after music therapy was the same as before music therapy, that is, no change.

The *z*-score test statistic from the Wilcoxon Matched-Pairs Signed-Ranks Test was -1.306. The associated *p*-value was .192. Therefore, at an

alpha level of .05, the difference between before and after measures of mood on the Affective Facial Scale (McGrath, 1990) was not statistically significant.

Discussion

This study was designed to investigate the way that music therapy impacts upon children's affect in hospital. The hypothesis that post-music therapy mood ratings on McGrath's (1990) Affective Facial Scale would be higher than the pre-music therapy ratings was not supported. While the results from the Affective Facial Scale ratings did not evidence a significant difference in affect between pre- and post-music therapy measures, the data still provide useful information for considerations of the effect of music therapy on children's affect, and on music therapy in the hospital environment.

Affective Facial Scale Data Interpretation

When examining the Affective Facial Scale data, there appears to be a spurious effect, which may account for the lack of a significant difference between ratings before and after music therapy. The median and mode ratings of 6 (the happiest face on the scale) before music therapy as seen in Table 1, and the high proportion of 6's selected at the beginning of the session as shown in Table 2 provide evidence for a ceiling effect in the data.

A ceiling effect is observed when the dependent variable (in this case, the scores on the Affective Facial Scale) approaches the maximum possible value (that is, the happiest face on the scale) in both conditions (before and after music therapy). If scores before the treatment intervention are already at the peak level, there is no room for them to increase following the intervention. Therefore, scores remain similar (around the highest value) in both conditions, which means that statistically significant differences are not observable. Table 4 also provides evidence for this, as it shows that

patients indicated the happiest face in 33 of the 45 instances where patients selected the same before and after score. Put simply, the data here suggest that children indicate they are already happy before music therapy, and the scale does not allow for them to indicate any further increase in positive affect following music therapy. In speaking with patients, the MTS discovered further evidence for a ceiling effect, with several occurrences where a child had selected the happiest face at the beginning of the session, and then said at the end of the session that the way they felt was beyond the end of the scale (that is, even happier than the happiest face).

Complexities of Measuring Emotion

Children's emotions are complex and multi-faceted. The Affective Facial scale can only capture one particular moment of a child's feeling, and even then may not realistically present the whole picture of how the child feels at that moment. Patients are asked to select one face from the range of six facial expressions to best describe the way they feel at that moment. This can be difficult for the child, especially if they are experiencing several feelings at once. Children might feel scared, anxious, guilty about being unwell and in hospital, but might also be glad to have family present, have enjoyable activities to take part in and have time off school. Additionally, if children have had previous experience with facial scales in hospital, the presentation of the Affective Facial Scale may be associated with pain, and elicit anxiety.

A retrospective examination of the clinical notes highlighted the difficulty children can have in selecting one face to represent their overall affect. For example, the clinical notes record this struggle for one child,

'Ollie' (the patient's name has been changed to help protect his identity), an 8-year-old burns patient. He was interested in playing the piano, so the MTS arranged for them to go to the chapel together to use the piano. Prior to going, Ollie had been rude to his nurse and when the MTS asked him about it, he said he was feeling sad because his father was leaving today and he was going to be living with his mother upon his discharge due that afternoon. Before his accident he had lived with his father.

During the course of the music therapy session, Ollie's father arrived at the hospital and joined in a shared music time. The session ended when Ollie's mother was due to arrive at hospital and his father needed to leave. When Ollie was asked how he felt at the end of the session, he told the MTS he was happy to play music, happy to spend time with his father, glad that his mother was coming but upset that his father was leaving. On top of this, one would expect Ollie to also feel concerned and anxious about his upcoming dressing change, possibly worried about what would happen after his discharge, affected by the pain and itching of his burns and skin grafts healing, and perhaps a little sad to leave some of the hospital staff and patients with whom he had built relationships. It was a great challenge for Ollie to find a face among the six on the Affective Facial Scale that could even begin to represent the multitude of simultaneous feelings he was experiencing at that time.

At other times, it was not possible or not appropriate to gather facial scale data. Some of the patients had severe developmental disabilities such as Autism and Rett's Syndrome. These patients were non-verbal and it was beyond their abilities to give an accurate indication of their feelings on the

facial scale. In other cases, patients were uncooperative in providing a rating, even when encouraged to do so – perhaps these patients were unable to stop and think about their feelings at that time because they were difficult or overwhelming. None of the work with children under 3 years of age involved use of the Affective Facial Scale, as these children were deemed to young to provide a true and meaningful indication of their feelings on the scale.

Environmental Influences on Children's Facial Scale Ratings

Aspects of the hospital environment and extraneous events are likely to have influenced children's responses on the Affective Facial Scale. The first difficulty that became apparent was that due to the nature of the hospital environment, music therapy sessions were not usually able to be planned, and typically took place as opportunities presented themselves. With this approach it was sometimes difficult to determine the exact 'beginning' and 'end' points of the session, particularly in group sessions. Group sessions usually took place in the playroom where patients were free to join or leave as they wished. It was often difficult to obtain Affective Facial Scale ratings from each child as they came and left, as this could disrupt the session, and it was unclear sometimes whether the child was coming back to the session or not. Data from patients who only remained engaged in music therapy for a very brief time (less than 10 minutes) was excluded from analysis.

Interruptions could also make determining session beginnings and endings difficult. For example, one session with two teenaged boys involved writing and performing a rap. The song was written with one patient, and

then another patient present in the room wanted to help perform it by providing a beatbox rhythm. After a few practices, the boys decided they would like to perform the rap to one of the play specialists. She was unavailable at that moment so the boys were required to wait some time before she came. During that time, they continued to practice the rap with the MTS, but also engaged in playing computer games while waiting. Once the play specialist had arrived, the boys performed the rap several times to her and other staff members. At this point, the 'after' measure was obtained on the Affective Facial Scale (the 'before' measure had been taken for the first patient at the beginning of songwriting, and the second patient when he began beatboxing and practicing with the rap even though he had been listening while engaged in prior activities).

From this example, it is evident how difficult it could be to determine the 'beginning' and 'ending' points of sessions for individuals. Should the 'beginning' measure for the second patient have been taken when the first patient began songwriting with the MTS? It was clear that this patient had been listening to the songwriting, although he was engaged in playing computer games. However, the MTS did not know that he would ask to become actively involved in the session. Therefore, perhaps his 'beginning' measure was not truly at the beginning for this patient, as he had been passively involved in the session already. Similarly, the ending was difficult to determine- should the measure have been taken when the song was written and the boys had practiced or should it have included the 'waiting' period and then be taken after the performances?

On a different occasion, a patient in an individual session was required to be seen by the doctor, thus interrupting the session. She returned after seeing the doctor to continue with the session, which ended shortly after with a closing song. In the meantime, another patient had been watching and listening to the session in the playroom and came over and began to play a xylophone while the MTS was closing the session with the first child. This led into an individual session for the second patient, but when the 'beginning' facial scale rating was taken he had already been engaged briefly in playing an instrument, and had been listening prior to this. It was difficult in these situations for the MTS to know when to take the 'before' and 'after' music therapy measures on the Affective Facial Scale.

Another factor that may have influenced the choices patients made on the Affective Facial Scale is the presence of others, whether they be the music therapist, family members or other patients. The presence of the music therapist, particularly being the one to ask the patient to indicate their mood on the facial scale, may have influenced the face that the child selected. The patient may want to please the music therapist, therefore choosing a 'happy' face, even if that does not truly reflect the way they feel. This may account in part for the high proportion of responses obtained at the 'happy' end of the scale. Similarly, patients may feel pressure to respond positively in the presence of parents and family members, because they want to please them and do not want their families to worry about the pain, anxiety or distress that they may be experiencing.

The presence of other patients, siblings or other children in the music therapy session may influence the child's choice of face on the Affective

Facial Scale in a different way. Peers are important contributors to a child or adolescent's development. In fact, according to Piagetian theory; peers may have equal or an even greater influence than parents on a child's development (Shaffer & Kipp, 2007). Patients may choose a face on the Affective Facial Scale based on their perception of what would be acceptable within the group, wanting to conform to other group members. Asch's (1955) foundational social psychology research in the area of group influence demonstratively showed that people have a tendency to conform to social norms and behave like one another. This phenomenon may lead to children choosing the same or similar faces on the facial scale. There were a couple of occasions where pairs of patients who had participated in music therapy together selected the same 'before' and 'after' faces on the scale. However, this could also be coincidental that they felt the same both before and after music therapy. Indeed, there were several cases of groups sessions where members did not select the same faces, but that is not to say they were not influenced by others' choices. It could be that there is a perceived socially acceptable range of answers (for example faces ranging from neutral to very happy) from which the patients felt comfortable choosing.

Furthermore, the literature on emotional contagion, which states that people have a propensity to mimic other people's facial expressions and behaviours and subsequently converge emotionally (Hatfield et al., 1994), may impact children's selection on the facial scale. Not only may patients take emotional cues from each other and their families, but may also be influenced by the emotion conveyed by the MTS.

There is the potential for responses to McGrath's (1990) Affective Facial Scale to show a pattern of results where the after music therapy measure is lower than the before measure. This may seem counterintuitive at first glance, where one would expect music therapy to assist the patient in coping with hospitalisation and increase positive affect. However, these results seem plausible when considering that the patient may be excitedly anticipating engagement in music activities (therefore indicating a happy face at the beginning of the session), and then indicating a less-happy face at the end if the child did not yet want to stop participating in music therapy. Due to the nature of the environment, interruptions were frequent, and sometimes necessitated the end of the session. In these circumstances it would not be unusual for the child to feel disappointed, and indeed at times the MTS felt that music therapy sessions were inevitably ended prematurely.

One such situation where the music therapy session needed to be ended quickly was when the MTS was working with a regular patient who came in 1 day per month for treatment. This patient was situated in an area of the hospital usually used for new patients to be assessed and observed before admission onto the ward. Due to the nature of her treatment, this patient, "Kate," was bedridden while her medication was administered (which took several hours).

At the beginning of the session, Kate knew the MTS, enjoyed music, and had experienced pleasurable music therapy sessions with the MTS previously. Thus, at the beginning of the session, it was likely that she was anticipating an enjoyable musical experience, which may, in turn, have led

her to select a happy face. During the course of the session at her bedside, there was an influx of new patients and the nursing staff decided to move Kate (and her bed) to another room on the ward. The MTS accompanied Kate to the new room where they found five other beds, with patients resting and a baby asleep. It was not feasible to continue making music in this environment without disturbing the other patients, so the MTS had to close the session by explaining why it had to stop and quietly singing a goodbye song.

Kate's indication on the Affective Facial Scale at the end of the session was a less happy face than the face she had indicated at the beginning of the session. It seemed that Kate was disappointed that the session had to end, and the MTS felt that the session would have continued quite some time longer if circumstances had not dictated otherwise. Indeed, further support for the belief that Kate felt unready to finish the music therapy session was provided when the MTS walked past the room about 10 minutes later and heard Kate singing "Old Macdonald had a farm."

Children could quickly become anxious and distressed when required to see the doctor or have short procedures done. When these events prevented the music therapy session from continuing, the therapist would take a few moments to end the session with a goodbye song to signal the finish of the session and provide closure for the patient. At this point, the after music therapy rating was obtained. As the child faces immediate medical intervention and the anxiety that can accompany the anticipation of this, one might expect their indication on the facial scale to reflect these feelings.

Not only medical procedures, but also medications (or lack thereof) in themselves can affect the way a child feels, and might influence their selection on McGrath's (1990) Affective Facial Scale. Some patients were heavily sedated when undergoing painful procedures for which music therapy was requested as a distraction. In these circumstances, the MTS generally did not obtain facial scale data, as the patient appeared too incapacitated to do so.

In work with burns and orthopaedic patients, encouraging movement was an important goal in music therapy to support the physiotherapy work. For example, an 8-year-old girl, "Maryanne," had broken her leg and was learning to use crutches. After approximately 6 weeks of having her leg immobilised in traction, she found this quite difficult. The MTS had developed a strong relationship with her over this period, and incorporated walking songs to support her use of the crutches in physiotherapy. During this time, Maryanne often became frustrated and upset with the difficulty of trying to walk, and the pain it caused. This, in turn, may have impacted upon her choice on the Affective Facial Scale.

Encouraging mobility was also important for another 8-year-old patient, this time a burns victim. "Robbie" had burns to his torso and his physiotherapist had given him exercises to increase mobility in his shoulder. Robbie was not particularly motivated to do these exercises, and they caused him some discomfort. However, he was interested in playing the drum, and during the course of music therapy he moved his arms quite vigorously for a period of time, performing the movements his physiotherapist had wanted. The MTS thought that the pain caused by this

(even though the movements were beneficial from both physiotherapy and psychosocial perspectives) might have influenced his selection on the facial scale. In actual fact, this particular patient was unable to point to a face on the Affective Facial Scale when asked. The MTS wondered whether this was because he was experiencing a range of different emotions at once, or perhaps that he felt unready and unprepared to examine his feelings if they were difficult emotions to sit with.

These examples illustrate a further consideration about the music therapy sessions. While most of the time it was hoped that music therapy would be an enjoyable experience for the patient, sometimes other goals were prominent and meant that the child did not necessarily have a pleasurable experience. A 5-year-old patient, "Cody" who had suffered an accident that required a partial limb amputation had been in hospital for several weeks and was growing very restless. One afternoon, in an individual music therapy session, Cody's frustration and pain reached a peak and culminated in very expressive vocal and instrumental improvisations. The MTS closed off the playroom for the duration of the session, and Cody vented his frustration and anger through loud banging on the drums, singing and yelling. During the course of the session, he was very active which may have exacerbated his discomfort, but he seemed very motivated to participate in music activities and moved himself around at his own volition.

Cody reported being in pain, and when the MTS sought the nurse it transpired that it had been several hours since any analgesics had been administered. At this point, it was decided to end the session, even though

Cody may have gained from further cathartic release of negative emotions and pain. Sometimes when people are in pain, it is more important to receive medication than to continue with therapy. When patients are not given necessary medications, the benefits they can receive from the therapy session may be diminished. At the conclusion of the session, Cody indicated an unhappy face on the Affective Facial Scale, which the MTS believed was due to the realisation of his frustrations, fears, anger and the pain that he was experiencing at that moment. Cody engaged in further music therapy sessions following this experience, which provided him with the opportunity to continue to explore and express his feelings in a safe and contained space.

The examples described above, about patients Maryanne, Robbie and Cody, show that looking at distress and happiness outcomes were not always sufficient in this context. Other goals, such as encouraging mobility, could be painful, yet beneficial for the patient. While the patients may indicate a sad face to indicate frustration and pain, this does not infer that the music therapy sessions were not helpful. Therefore, basing the outcome of a music therapy session on facial scale data might not provide a true representation of the session, as it is unable to reflect the goals of the session and the outcome in relation to these goals. In the MTS's clinical practice, the facial scale data were used to complement the clinical notes. These notes detailed the goals, observations in the sessions, and the therapist's reflections on the session. The information provided in these notes informed the therapist about possible reasons for patients' choices on

the facial scale and without this information, the facial scale data might provide an overly simplified depiction of the music therapy sessions.

Other extraneous factors might have also affected children's indications on McGrath's (1990) Affective Facial Scale. In the course of a group music therapy session, a 5-year-old patient accidentally injured a 3-year-old patient while playing instruments. The injured girl began to cry, and the 5-year-old boy became upset that he had hurt her. He apologised and his mother and the MTS decided to end the session and take the girl to her mother. When taking the facial scale rating, the girl was too distressed to indicate a face, and the boy selected a sad face, which he said was because he was feeling bad about hurting her.

On another occasion a young boy selected a less happy face at the end of the music therapy session, compared with his beginning rating, following a chastisement from his mother about refusing to share an instrument with another child. At the time, the boy's mother commented after his selection that the face he chose had nothing to do with the music, but rather was in response to the reprimand she had just given him. Although the therapist may have persisted in supporting the child to share the instruments with others, the boy's mother was aware that the way she had reprimanded him had upset him.

These few examples give some indication of what it is like to work in a busy hospital environment. One cannot realistically control for outside events taking place, which can interrupt or terminate music therapy sessions. At times it was difficult to ascertain the beginning and ending of a session for the appropriate time to take facial scale measurements. As can

be seen, a host of other factors might influence a child's choice when selecting a face on McGrath's (1990) Affective Facial Scale, which do not necessarily reflect upon the impact of the music therapy session. It is clear that a number of complexities are involved in measuring the effectiveness of a music therapy session, particularly in this setting. It is believed that other factors related to the hospital environment could contribute to an explanation as to why the pattern of findings did not show a statistically significant difference in patients' affect after music therapy, compared with their affect before the music therapy session. The statistical findings, paired with the important qualitative data provided in the clinical records, suggest that McGrath's (1990) Affective Facial Scale may not have been a particularly useful measure of patients' affect in this setting.

The Impact of Hospitalisation

Although no significant difference in children's self-reported ratings of mood was observed in this study, this does not necessarily mean that children do not experience distress and negative emotions in hospital. A body of literature indicates that children do find hospital a stressful experience (Hägglöf, 1999; Peebles-Kleiger, 2000; Skipper & Leonard, 1968) and the observations made by the MTS in the environment show, for a number of children, the presence of several of the seven factors that Shields (2001) connects with the exacerbation of stress for hospitalised children. (These seven factors were admission exceeding 2 weeks, painful injuries or illness, lack of sufficient preparation for routine admissions, prior negative experiences of hospitalisation, parental absence, parental anxiety and inadequate paediatric training for hospital staff). Moreover, the five stressful

situations outlined by Petrillo and Sanger (1980) were relevant for many patients. (These five situations were separation from family and home, unfamiliar people and room, being subject to nurses and staff carrying out procedures that could be painful, unfamiliar environment, equipment and routines, and an altered understanding of illness).

Furthermore, there is converging evidence that not only do hospitalised children experience stress, but also that stress has a physiological impact upon the body (Harbeck-Weber & McKee, 1995; Lepore, et al., 1997; Rozanski & Kubzansky, 2005; Skipper & Leonard, 1968). Although the before music therapy measures tended to show happy faces the majority of the time (as discussed with reference to a ceiling effect), perhaps this can be interpreted as an issue with the sensitivity of the measure, rather than inferring that the children did not experience stress. There were a myriad of other factors that may have influenced their choices on McGrath's (1990) Affective Facial Scale, such as the anticipation of an enjoyable experience in music leading a child to select a happy face at the beginning of the session.

Additionally, the fact that many children selected happy faces at the beginning of music therapy sessions may attest to the steps that the hospital has taken to try to minimise distress and promote coping. Stressors are still evident in the hospital environment, and children do become upset, but the encouragement for families to accompany their child in hospital, and the employment of two play specialists to support psychosocial wellbeing and prepare children for procedures are movements in a positive direction for creating a more child-friendly environment. It is worth noting that the play

specialists on the ward already employed the use of recorded music and live singing. Research has shown that music used in this way by non-music therapists can help children cope with hospitalisation, particularly by distracting them from pain (Edwards, 1999b). Therefore, indications of happy faces at the beginning of music therapy sessions may have been due, in part, to the positive input from staff in helping children to cope with hospitalisation. It is also important to consider that children might have still felt distressed right up to the point of music therapy, where they may have then become excited about the opportunity to participate in musical activities.

Music Therapy in Paediatric Care

Although significant results were not observed with the use of McGrath's (1990) Affective Facial Scale in this study, there is a wealth of evidence that music therapy can help children cope with hospitalisation. Music therapy facilitates coping by supporting development (Barrickman, 1989; Edwards, 1999b; Kennelly, 2000; O'Neill & Pavlicevic, 2003; Robb, 1999), by offering opportunities for children to make choices and gain some control over their environment (Robb, 1999; Sheridan & McFerran, 2004), by distracting patients during medical procedures and while waiting for surgery (Edwards, 1999b; Edwards & Kennelly, 1999; Kleiber, 2001; Malone, 1996; Robb, 1999; Whitehead-Pleaux, et al., 2006), by assisting with management of pain (Edwards, 1999c; Edwards & Kennelly, 1999; Han, 1998; Loewy, 1999; Lorenzato, 2005; Pfaff, et al., 1989; Taylor, 1997; Turry, 1999), by encouraging children to express their emotions (Hendon & Bohon, 2008; Kennelly, 1999; Lathom-Radocy, 2002; Loveszy, 1991; Neugebauer &

Neugebauer, 2003; Perez, 1989; Robb, 2003; Rudenberg & Royka, 1989; Wallace, 1996), and by addressing children's fear and anxiety (K. Aldridge, 1993; Barrera, et al., 2002; Brodsky, 1989; Chetta, 1981; Edwards, 1999a, 1999c; Fagen, 1982; Lorenzato, 2005; Loveszy, 1991; MacDonald, et al., 1999; Marley, 1996; McDonnell, 1984; Micci, 1984; Perez, 1989; Preti & Welch, 2004; Robb, et al., 1995; Taylor, 1997; Turry, 1999; Wallace, 1996; Whipple, 2003; Whitehead-Pleaux, et al., 2006).

The substantial amount of research on the effects of music therapy in paediatric care casts doubt on the interpretation of these results as demonstrating a general inefficacy of music therapy. It seems more likely that the reason for the lack of significant results pertains to the environment in which the measure was taken – and the effects of this environment on the data (as previously discussed), and to the usefulness of the facial scale itself.

Facial Scales

Facial scales are measures widely used to provide children's self-reported levels of pain or affect. They are simple, quick and easy to use, which is perhaps why they are so commonly implemented in paediatric settings. However, it seems that little music therapy research has made use of these scales, particularly with reference to children's affect. Among the few music therapy research papers that utilised some sort of facial scale, it can be seen that the facial scale measure was utilised alongside other measures of pain, fear, anxiety or quality of play (Barrera, et al., 2002; Pfaff, et al., 1989; Whitehead-Pleaux, et al., 2006). Self-reported measures were used in conjunction with physiological measures, observational measures of behaviour and interviews with parents. It is noteworthy to mention that of

these three studies, only Barrera, et al. (2002) reported significant effects with a facial scale measure. Pfaff, et al. (1989) observed nonsignificant trends in both facial scale and observational measures of patient distress, while Whitehead-Pleaux, et al. (2006) found significant differences in physiological indices of anxiety and in coding of patient behaviour in a nursing assessment but not in facial scale data.

The only music therapy research found to utilise McGrath's (1990) Affective Facial Scale was that conducted by Robb (2000). This study employed both behavioural measures and self-reported measures of affect. The results demonstrated a significant difference in patient affect in music therapy compared with other conditions (control conditions and reading conditions). However, this difference was only detectable in the observational measures of behaviour, and was not shown in the Affective Facial Scale data.

These few studies suggest that facial scale data may, at times, fail to uncover differences in patients' pain intensity or affect, even though the differences are there (as revealed by other methods of measurement). It might be that facial scales are best used as a simple indication for clinician's of a patient's pain intensity or affect at that moment, and not used for comparison measures between various conditions, or over time (that is, before and after measurements). Perhaps facial scales are better suited to pain intensity measurement, rather than measures of affect, as might be suggested by the fact that there are several facial scales in use for pain measurements, but only one that is used for affect. With regard to usefulness for music therapy, facial scales may provide too crude a measure

to reflect the complex emotional processes that can take place during a session. The profession may benefit from the development of a more sensitive affect assessment tool designed specifically for use in a music therapy context. However, in a hospital setting, it might be desirable to consider keeping any such assessment tool as simple and non-invasive as possible.

As a clinician, my personal feelings around administering the facial scale were mixed. Initially, I found that even though the scale was very simple and non-invasive, the very act of approaching patients for music therapy felt a little intrusive. Over time I grew in confidence and became comfortable approaching new patients and their families. When patients indicated that they would like to have music therapy, I felt relatively at ease about administering the facial scale, as it was a simple matter of pointing to a face at the beginning of the session and again at the end. The use of the facial scale was part of my normal practice on the ward, so I viewed it as one component of the music therapy package that was on offer to patients. The facial scale question became a routine part of the session, much like the use of hello and goodbye songs. Ideally, the facial scale was administered immediately before singing hello, and immediately after singing goodbye, but this was not always possible. I felt that the facial scale had additional value as it may have performed a similar function to the hello and goodbye songs, because it was used at the beginning and end of the session. Therefore, the facial scale may have acted as a further cue to frame the session by reinforcing its beginning and ending. I felt that closing sessions was particularly important in this environment, where it was uncertain

whether there would be any further opportunities to work with a patient again.

Limitations of the Present Research

This research was based at only one paediatric setting, and does not necessarily represent the outcomes of music therapy sessions in other settings. The children's ward on which the research took place is likely to provide a fair indication of other children's wards nationwide (although paediatric wards in other New Zealand hospitals can differ somewhat, particularly in terms of staffing and resources in Allied Health). However, music therapy is still very much in a pioneering stage in hospitals within New Zealand, and therefore the environment and context in which the research took place may be quite unlike the environment found in paediatric facilities abroad.

The scope of this study was fairly small, to fit requirements for the word limitations of the research paper and the time frame for completion. As such, and given the infancy of music therapy in paediatrics, this study was considered as initial exploratory and investigative research. Opportunities for advancement of this line of research are plentiful. The mood measure was restricted to the use of McGrath's (1990) Affective Facial Scale, as this was a non-invasive measure and was included as part of the clinical information gathered from each session. The facial scale ratings, combined with the music therapy clinical notes, functioned to inform the MTS, Allied Health staff and wider paediatric staff (where appropriate) of the outcomes of music therapy for each session.

Because the Affective Facial Scale was used as a part of normal and usual clinical practice, the research involved only the examination of clinical data. This means that ethically, informed consent from patients and families was not required, as the research focused on auditing clinical records and did not involve experimental manipulation with human participants. This allowed for a much larger pool of data than would have been possible using an experimental approach, including other evaluations of affect such as behavioural observations or measurement of physiological responses. Moreover, because hospitalisation can cause patients and families to become stressed and anxious, it was deemed that a non-invasive research method would be preferable to potentially adding to that anxiety by asking patients to participate in a research project requiring procedures additional to standard care.

A further limitation, which has already been raised, is that the researcher collecting the facial scale data was also the therapist. While this is appropriate and fitting when considering the facial scale data as part of the clinical information collected in the normal music therapy environment, the patients' responses may have been influenced by this dual role (for example, answering in a way that they thought would please the therapist).

The nature of the busy children's ward did not allow for much control over the environment in which music therapy sessions took place. In other settings, there might be more scope to structure and timetable sessions with clearly defined beginnings and endings and a certain period of time allocated per session, without other interruptions. This would help to remove extraneous influences on the children's responses on the Affective

Facial Scale, and therefore might provide a more accurate reflection of the impact of music therapy.

A strength of the present research is that it incorporated relevant material from the written clinical notes to inform the interpretation of the statistical data provided from the Affective Facial Scale scores. The observations and thoughts of the MTS recorded after each session provided a comprehensive depiction of the patients' behaviour and the hospital environment, and contemplation of how patients may be impacted by their environment and others around them. This gave a rich source of data for contextualising and considering various interpretations and explanations for the statistical results.

Personal Researcher Learning

The results from this research impacted upon my personal views and practice of music therapy. I felt somewhat disappointed that the facial scale data did not yield significant results, and wondered whether the failure to observe significant changes in patients' mood was a reflection on my clinical work. As a student in training, I felt challenged trying to work in this new and complex environment, and thought perhaps a more experienced, "better" music therapist might have obtained significant results. However, the main observation from the data was a ceiling effect, where patients indicated they were already happy at the beginning of the session.

Therefore, the only way one would be likely to see significant improvements in positive affect, using this scale, would be if the initial scores at the beginning of the session were further towards the sad end of the scale, to produce a larger contrast to the happy scores at the end of the session. I

certainly did not wish my patients to be sad before receiving music therapy for the sake of significant results! As I reflected further on the findings, I realised there were many factors that might have contributed to the statistical results obtained, and that the use of other measures might have obtained different results. Moreover, I felt that the individual experiences of both patients and myself in sessions, the information in the clinical notes, the discussions in clinical supervision, and my personal reflective journal writing provided a more detailed and accurate depiction of the music therapy sessions. Therefore, I placed value on the information from these sources as an indication of the quality of my work. Words of thanks from grateful parents, smiles on children's faces, and encouragement from colleagues gave me confidence that although my statistical results were not significant, this did not mean that my practice was not meaningful and worthwhile.

Suggestions for Future Research

Future research investigating the effects of music therapy on paediatric patients' mood could include a number of different measures of affect. Information from different measurement modalities would provide a clearer picture of the impact of music therapy, and the ways in which it affects patients' mood. However, to undertake this type of research, one needs to weigh up the implications this has for practically carrying out the research in a hospital environment, and how invasive it may be for children and their families. Perhaps the inclusion of other measures that do not directly involve the child would be preferable, such as questionnaires or interviews with parents and nursing staff about their observations and

impressions of the effect music therapy had on the child's mood. The information garnered retrospectively from the clinical notes suggests that qualitative data might provide a more sensitive measurement of music therapy on mood than that provided by quantitative measures. Therefore, it may be particularly useful to use questionnaire and interview methods in future research.

Similar research using a range of self-report measures of mood could be employed in different settings. There may be wards of large paediatric hospitals that have a more controlled environment, enabling data outcomes to be less affected by outside influences. The assessment of music therapy on mood may also be applied to different populations, such as elderly clients or hospitalised adults.

Although the hospital setting seems to pose a number of difficulties when attempting to control for variables in experimental studies, it would be beneficial to add more experimental research to the music therapy literature. However, careful planning and sensitivity would be advised to minimise any additional distress the patients and their families may come under as a result of experimental participation.

It has been shown that hospitalised children's emotion and distress are linked to parental mood and anxiety levels (Siegel & Conte, 2001; Skipper & Leonard, 1968). With a move towards family-oriented care, research into the influence of parental involvement in music therapy to reduce anxiety and increase positive mood in both children and parents is warranted. Ayson's (2007) research on child-parent wellbeing in a paediatric environment examines the way that music therapy can support

both children and their parents. Her study highlights the value of conducting further research that focuses on the impact of hospitalisation on both patients and their families.

This study will contribute to the body of music therapy research in paediatrics, and has helped to illuminate the challenges that are faced in pioneering music therapy in hospital settings in New Zealand. This knowledge could inform professionals in the field and in related fields to advance the progress of establishing music therapy as an important intervention in the care of hospitalised children.

Conclusion

The results from this study are not clear-cut. There was no significant difference in children's self-reported mood between pre- and post-music therapy scores on McGrath's (1990) Affective Facial Scale. However, a high (happy) rating was already provided by children at the beginning of the session and there was little room for improvement in rating scores following the session (a ceiling effect). The process of this research highlighted several aspects of the environment of the paediatric ward that may differ from other settings where music therapy is practiced. Due to the nature of the environment, sessions needed to be flexible, could not realistically be planned in advance, and needed to accommodate a wide range of interruptions. This environment therefore appears to have impacted upon the ratings children made on the facial scale in a number of different ways, meaning that their ratings do not necessarily solely indicate the effect of the music therapy sessions. Importantly, initial high ratings may have been a reflection of the anticipation of music making, rather than an indication of the child's mood prior to the offer of music therapy.

Music therapy is still very much in its infancy in paediatric wards in New Zealand, and it was hoped that this research would provide support for its inclusion in programmes for comprehensive care of children in hospital. Although significant results were not obtained, this research is still valuable as it provides insight into the workings of music therapy in this environment, and describes the body of literature on the use of music therapy in paediatrics. This was a relatively small-scale study, and a number of limitations were recognised. Further research into the effects of music

therapy on paediatric patients' affect is warranted. The inclusion of in-depth qualitative research may reveal more clearly the impact that music therapy makes upon children's mood and psychosocial wellbeing. It is hoped that this study will spark interest and encourage further research in this field.

References

- Aldridge, D. (1993). Music therapy research 1: A review of the medical research literature within a general context of music therapy research. *The Arts in Psychotherapy, 20*, 11-35.
- Aldridge, K. (1993). The use of music to relieve pre-operational anxiety in children attending day surgery. *The Australian Journal of Music Therapy, 4*, 19-35.
- American Psychiatric Association (Ed.). (2000). *Diagnostic and statistical manual of mental disorders* (Fourth Edition, Text Revision ed.). Washington, DC: American Psychiatric Association.
- Asch, S.E. (1955). Opinions and social pressure. *Scientific American, 193*, 31-35. Abstract obtained from APA/PsycINFO Item: 1956-08022-08001.
- Ayson, C. M. (2007). *Child-parent wellbeing in a paediatric ward: The role of music therapy in supporting children and their parents facing the challenge of hospitalisation*. Unpublished master's thesis, New Zealand School of Music, Wellington, New Zealand.
- Barrera, M. E., Rykov, M. H., & Doyle, S. L. (2002). The effects of interactive music therapy on hospitalized children with cancer: A pilot study. *Psycho-Oncology, 11*, 379-388.
- Barrickman, J. (1989). A developmental music therapy approach for preschool hospitalized children. *Music Therapy Perspectives, 7*, 10-16.
- Brewer, S., Gleditsch, S. L., Syblik, D., Tietjens, M. E., & Vacik, H. W. (2006). Pediatric anxiety: child life intervention in day surgery. *Journal of Pediatric Nursing, 21*, 13-22.

- Brodsky, W. (1989). Music therapy as an intervention for children with cancer in isolation rooms. *Music Therapy, 8*, 17-34.
- Carr, T. D., Lemanek, K. L., & Armstrong, F. D. (1998). Pain and fear ratings: Clinical implications of age and gender differences. *Journal of Pain and Symptom Management, 15*, 305-313.
- Chambers, C. T., Giesbrecht, K., Craig, K. D., Bennett, S. M., & Huntsman, E. (1999). A comparison of faces scales for the measurement of pediatric pain: Children's and parents' ratings. *Pain, 83*, 25-35.
- Chetta, H. D. (1981). The effect of music and desensitization on preoperative anxiety in children. *Journal of Music Therapy, 18*, 74-87.
- Cunningham, D. (2007). Kindness of strangers. *Readers Digest, 171*, 17-18.
- DeCuir, A. A. (2005). Statistical methods of analysis. In B. L. Wheeler (Ed.), *Music Therapy Research* (2nd ed., pp. 138-167). Gilsum, NH: Barcelona Publishers.
- Edwards, J. (1999a). Anxiety management in pediatric music therapy. In C. Dileo (Ed.), *Music therapy and medicine: Theoretical and clinical applications* (pp. 69-76). Silver Spring, MD: The American Music Therapy Association, Inc.
- Edwards, J. (1999b). Music therapy in medical settings. *Annual Journal of the New Zealand Society for Music Therapy, 7-27*.
- Edwards, J. (1999c). Music therapy with children hospitalised for severe injury or illness. *British Journal of Music Therapy, 13*, 21-27.
- Edwards, J. (2005). A reflection on the music therapist's role in developing a program in a children's hospital. *Music Therapy Perspectives, 23*, 36-44.

- Edwards, J. (2008). The use of music in healthcare contexts: A select review of writings from the 1890s to the 1940s. *Voices: A World Forum for Music Therapy*, 8. Retrieved from <http://www.voices.no/mainissues/mi40008000270.php>
- Edwards, J., & Kennelly, J. (1999). *Clinician's manual: Music therapy for children in hospital*. Brisbane, QLD: University of Queensland Printery.
- Essex-Sorlie, D. (1995). *Medical biostatistics and epidemiology: Examination and board review*. Norwalk, CT: Appleton & Lange.
- Fagen, T. S. (1982). Music therapy in the treatment of anxiety and fear in terminal pediatric patients. *Music Therapy*, 13-23.
- Fernandez, E. (1986). A classification system of cognitive coping strategies for pain. *Pain*, 26, 141-151.
- Froehlich, M. R. (1984). A comparison of the effect of music therapy and medical play therapy on the verbalization behavior of pediatric patients. *Journal of Music Therapy*, 21, 2-15.
- Hägglöf, B. (1999). Psychological reaction by children of various ages to hospital care and invasive procedures. *Acta Pædiatrica Supplement*, 431, 72-78.
- Han, P. (1998). The use of music in managing pain for hospitalized children. *The Australian Journal of Music Therapy*, 9, 45-56.
- Harbeck-Weber, C., & McKee, D. H. (1995). Prevention of emotional and behavioral distress in children experiencing hospitalization and chronic illness. In M. C. Roberts (Ed.), *Handbook of pediatric psychology* (pp. 167-184). New York: The Guildford Press.

- Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1994). *Emotional contagion*.
Cambridge: Cambridge University Press.
- Hendon, C., & Bohon, L. M. (2008). Hospitalized children's mood differences during play and music therapy. *Child: Care, Health and Development*, 34, 141-144.
- Kennedy, C., Kools, S., Kong, S. K. F., Chen, J.-L., Franck, L., & Wong, T. K. S. (2004). Behavioural, emotional and family functioning of hospitalized children in China and Hong Kong. *International Nursing Review*, 51, 34-46.
- Kennelly, J. (1999). "Don't give up": Providing music therapy to an adolescent boy in the bone marrow transplant unit. In R. R. Pratt & D. E. Grocke (Eds.), *MusicMedicine 3: MusicMedicine and music therapy: Expanding horizons* (pp. 228-237). Melbourne, Australia: The University of Melbourne.
- Kennelly, J. (2000). The specialist role of the music therapist in developmental programs for hospitalized children. *Journal of Pediatric Health Care*, 14, 56-59.
- Kleiber, C. (2001). Distraction. In M. Craft-Rosenberg (Ed.), *Nursing interventions for infants, children, and families* (pp. 315-328). Thousand Oaks, CA: Sage Publications, Inc.
- Knafel, K. A., Deatrack, J. A., & Kirby, A. (2001). Normalization promotion. In M. Craft-Rosenberg (Ed.), *Nursing interventions for infants, children, and families* (pp. 373-388). Thousand Oaks, CA: Sage Publications, Inc.

- Lathom-Radocy, W. B. (2002). *Pediatric music therapy*. Springfield, IL: Charles C Thomas Publisher, Ltd.
- Lepore, S., Miles, H., & Levy, J. (1997). Relation of chronic and episodic stressors to psychological distress, reactivity, and health problems. *International Journal of Behavioral Medicine*, 4, 39-59.
- Loewy, J. (1999). The use of music psychotherapy in the treatment of pediatric pain. In C. Dileo (Ed.), *Music therapy and medicine: Theoretical and clinical applications* (pp. 189-206). Silver Spring, MD: The American Music Therapy Association, Inc.
- Lorenzato, K. I. (2005). *Filling a need while making some noise: A music therapist's guide to pediatrics*. London: Jessica Kingsley Publishers.
- Loveszy, R. (1991). The use of latin music, puppetry, and visualization in reducing the physical and emotional pain of a child with severe burns. In K. E. Bruscia (Ed.), *Case Studies in Music Therapy* (pp. 153-162). Gilsum, NH: Barcelona Publishers.
- MacDonald, R. A. R., Ashley, E. A., Davies, J. B., Serpell, M. G., Murray, J. L., Rogers, K., et al. (1999). The anxiolytic and pain reducing effects of music on post-operative analgesia. In R. R. Pratt & D. E. Grocke (Eds.), *MusicMedicine 3: MusicMedicine and music therapy: Expanding Horizons* (pp. 12-18). Melbourne, Australia: The University of Melbourne.
- Malone, A. B. (1996). The effects of live music on the distress of pediatric patients receiving intravenous starts, venipunctures, injections, and heel sticks. *Journal of Music Therapy*, 33, 19-33.

- Maranto, C. D. (1996). Research in music and medicine: The state of the art. In M. R. Froehlich (Ed.), *Music therapy with hospitalized children* (pp. 39-66). Cherry Hill, NJ: Jeffrey Books.
- Marley, L. (1996). Music therapy with hospitalized infants and toddlers in a child life program. In M. R. Froehlich (Ed.), *Music therapy with hospitalized children* (pp. 77-86). Cherry Hill, NJ: Jeffrey Books.
- McDonnell, L. (1984). Music therapy with trauma patients and their families on a pediatric service. *Music Therapy*, 4, 55-63.
- McFerran, K. (2006). Hidden and professional questions in music therapy research. *Voices: A World Forum for Music Therapy*. Retrieved from <http://www.voices.no/columnist/colmcferran270306.php>
- McGrath, P. A. (1990). *Pain in children: Nature, assessment, and treatment*. New York: Guildford Press.
- Micci, N. O. (1984). The use of music therapy with pediatric patients undergoing cardiac catheterization. *The Arts in Psychotherapy*, 11, 261-266.
- Milford, J. (1992). Music and medicine: Future directions for music therapy? *Australian Journal of Music Therapy*, 3, 27-36.
- Neugebauer, C. T., & Neugebauer, V. (2003). Music therapy in pediatric burn care. In S. L. Robb (Ed.), *Music therapy in pediatric healthcare: research and evidence-based practice* (pp. 31-48). Silver Spring, MD: The American Music Therapy Association, Inc.
- O'Callaghan, C. C., & Colegrove, V. (1998). Effect of music therapy introduction when engaging hospitalized cancer patients. *Music Therapy Perspectives*, 16, 67-74.

- O'Neill, N., & Pavlicevic, M. (2003). What am I doing here? Exploring a role for music therapy with children undergoing bone marrow transplantation at Great Ormond Street Hospital, London. *British Journal of Music Therapy, 17*, 8-16.
- Peebles-Kleiger, M. J. (2000). Pediatric and neonatal intensive care hospitalization as traumatic stressor: Implications for intervention. *Bulletin of the Menninger Clinic, 64*, 257-280.
- Perez, M. (1989). Music, emotions, and hospitalized children: Some theoretical considerations. In M. H. M. Lee (Ed.), *Rehabilitation, music and human well-being*. (pp. 242-252). Saint Louis, MO: MMB Music, Inc.
- Peterson, L. (1989). Coping by children undergoing stressful medical procedures: Some conceptual, methodological, and therapeutic issues. *Journal of Consulting and Clinical Psychology, 57*, 380-387.
- Petrillo, M., & Sanger, S. (1980). *Emotional care of hospitalized children: An environmental approach* (2nd ed.). Philadelphia, PA: J. B. Lippincott Company.
- Pfaff, V. K., Smith, K. E., & Gowan, D. (1989). The effects of music-assisted relaxation on the distress of pediatric cancer patients undergoing bone marrow aspirations. *Children's Health Care, 18*, 232-236.
- Pratt, R. R. (1997). *Hospital arts: A sound approach*. Benton Harbor, MI: Patterson Printing.
- Preti, C., & Welch, G. F. (2004). Music in a hospital setting: A multifaceted experience. *British Journal of Music Education, 21*, 329-345.

- Rees, C. (2005). Brief encounters. In M. Pavlicevic (Ed.), *Music therapy in children's hospices: Jessie's fund in action* (pp. 81-94). London: Jessica Kingsley Publishers.
- Robb, S. L. (1999). Piaget, Erikson, and coping styles: Implications for music therapy and the hospitalized preschool child. *Music Therapy Perspectives, 17*, 14-19.
- Robb, S. L. (2000). The effect of therapeutic music interventions on the behavior of hospitalized children in isolation: Developing a contextual support model of music therapy. *Journal of Music Therapy, 37*, 118-146.
- Robb, S. L. (2003). Coping and chronic illness: Music therapy for children and adults with cancer. In S. L. Robb (Ed.), *Music therapy in pediatric healthcare: Research and evidence-based practice* (pp. 101-136). Silver Spring, MD: The American Music Therapy Association, Inc.
- Robb, S. L., Nichols, R. J., Rutan, R. L., Bishop, B. L., & Parker, J. C. (1995). The effects of music assisted relaxation on preoperative anxiety. *Journal of Music Therapy, 32*, 2-21.
- Rozanski, A., & Kubzansky, L. (2005). Psychological functioning and physical health: A paradigm of flexibility. *Psychosomatic Medicine, 67*, S47-S53.
- Rudenberg, M. T., & Royka, A. M. (1989). Promoting psychosocial adjustment in pediatric burn patients through music therapy and child life therapy. *Music Therapy Perspectives, 7*, 40-43.
- Shaffer, D. R., & Kipp, K. (2007). *Developmental psychology: Childhood and adolescence* (7th ed.). Canada: Thomson Wadsworth.

- Sheridan, J., & McFerran, K. (2004). Exploring the value of opportunities for choice and control in music therapy within a paediatric hospice setting. *Australian Journal of Music Therapy, 15*, 18-32.
- Shields, L. (2001). A review of the literature from developed and developing countries relating to the effects of hospitalization on children and parents. *International Nursing Review, 48*, 29-37.
- Siegel, L., & Conte, P. (2001). Hospitalization and medical care of children. In C. E. Walker & M. C. Roberts (Eds.), *Handbook of clinical child psychology* (3rd ed., pp. 895-909). New York: John Wiley & Sons, Inc.
- Skinner, E. A., & Wellborn, J. G. (1994). Coping during childhood and adolescence: A motivational perspective. In D. L. Featherman, R. M. Lerner & M. Perlmutter (Eds.), *Life-span development and behavior* (Vol. 12, pp. 91-133). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- Skipper, J. K., Jr., & Leonard, R. C. (1968). Children, stress, and hospitalization: A field experiment. *Journal of Health and Social Behavior, 9*, 275-287.
- Standley, J. M. (1986). Music research in medical/dental treatment: Meta-analysis and clinical applications. *Journal of Music Therapy, 13*, 56-122.
- Taylor, D. B. (1997). *Biomedical foundations of music as therapy*. Saint Louis, MO: MMB Music, Inc.
- Turry, A. (1999). A song of life: Improvised songs with children with cancer and serious blood disorders. In T. Wigram & J. De Backer (Eds.), *Clinical applications of music therapy in developmental disability*,

paediatrics and neurology (pp. 13-31). London: Jessica Kingsley Publishers.

Wallace, L. (1996). The use of toys within music therapy to meet the needs of children on an orthopaedic ward. *Annual Journal of the New Zealand Society for Music Therapy*, 20-36.

Wheeler, B. L. (2005). Introduction: Overview of music therapy research. In B. L. Wheeler (Ed.), *Music Therapy Research* (2nd ed., pp. 3-19). Gilsum, NH: Barcelona Publishers.

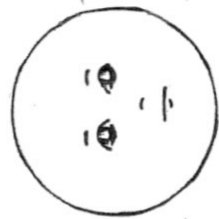
Whipple, J. (2003). Surgery buddies: A music therapy program for pediatric surgical patients. *Music Therapy Perspectives*, 21, 77-83.

Whitehead-Pleaux, A. M., Baryza, M. J., & Sheridan, R. L. (2006). The effects of music therapy on pediatric patients' pain and anxiety during donor site dressing change. *Journal of Music Therapy*, 43, 136-153.

Wigram, T., Pedersen, I. N., & Bonde, L. O. (2002). *A Comprehensive Guide to Music Therapy*. London: Jessica Kingsley Publishers.

Appendix A

McGrath's (1990) Affective Facial Scale, as used in this Research



Initials:

Gender:

Age:

Appendix B

Example of Music Therapy Clinical Notes

Date: 18/11/08

Time: 2:30 – 3:00 pm

Name: Andy¹

Age: 4

Reason for Hospitalisation: scheduled operation to release burn scar contractures in the neck²

Parent/sibling present: Mum and big sister, Alana

Goal: distraction while waiting for surgery

Comment: Andy really seems to like “Twinkle, Twinkle, Little Star” and we sang it several times with Andy directing which instruments each person played. Mum explained that she played an orchestral recording of this song to calm him down when he came out of surgery (he has had several previous operations for his burns). I wondered if perhaps he wanted to hear and play this song to help regulate his anxiety before his operation. I had initially picked up on the song as his sister had been playing it on the toy piano in the corner of the playroom. We sang “We’ve got a Rock Band” and Andy appeared to particularly favour playing very fast. In general, Andy played a steady beat and was listening carefully to the music to match the phrase endings. He reported feeling happy but “sad at the same time,” although this corresponded to the happiest face on the facial scale. I think his comment was likely to be an indication of pre-operative anxiety.

¹ All names have been changed to help protect patient confidentiality

² A burn scar contracture is where the scarring from a burn thickens and tightens as it heals, restricting muscle movement.