

THE EFFECT OF MUSIC THERAPY SESSIONS ON THE INTERACTIONS BETWEEN CHILDREN AND THEIR PARENTS AND HOW TO MEASURE IT, WITH REFERENCE TO ATTACHMENT THEORY

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SUMMARY

Music therapy and attachment is an expanding field and the number of studies addressing the theoretical work is slowly growing. There are both qualitative and quantitative approaches to studying the effect of regular music therapy sessions on parent-child interactions and these cover a range of patient populations including: children at risk of neglect, parents with a trauma history, children coping with bereavement and a large number addressing the disability population, including autism spectrum disorder. These studies suggest that music therapy benefits the parent-child relationship through the improvement communication, especially non-verbal communication, and so increased the feeling of closeness and understanding. Following a review of the available literature, a pilot study is described using transcripts of video recordings of music therapy sessions, and subsequent colour coding and conversion of the data into pie charts provides a potential method of analysis that produces an "interaction profile" of each parent-child dyad. Preliminary results of this method of analysis suggest that music therapy sessions might be able to improve interactions through therapists addressing the power dynamics within a relationship. The new method developed in this pilot study to visualise and study the parent-child relationship in music therapy sessions was effective and could be used and developed by music therapy researchers in the future.

Key words: music therapy - parent-child relations - object attachment

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INTRODUCTION

Music therapy began to be in large scale demand after the two world wars as a way of supporting the large numbers of returned servicemen (Edwards 2007). Its use within families has been to "strengthen parent-child relationships through increasing developmentally conducive interactions, by assisting parents to bond with their children, and by extending the repertoire of parenting skills in relating to their child through interactive play" (Abad 2007). The literature surrounding attachment and music therapy has grown, with the suggestion that it promotes positive, meaningful interactions that create a context for developing healthy relationships over time (Pasiali 2014).

Attachment theory originated and was developed by Bowlby and Ainsworth. Bowlby described attachment as a "lasting psychological connectedness between human beings" (Bowlby 1969). Ainsworth developed the study of attachment with her work on the Strange Situation Procedure, producing a method of measuring infants' attachment to their mothers (Ainsworth & Wittig 1969). This experimental procedure classified attachment into three categories: secure, insecure-avoidant and insecure-ambivalent/resistant, which were based on the degree and type of distress a child showed upon separation from their mother (Ainsworth 1970). The work of Winnicott and the school of object relations further adds to the literature on parent-child bonding, notably for his concept of the "good enough mother", a mother who is

not "perfect" in the eyes of the infant but good enough to strike a balance between allowing her child to experience frustrations, and adapting to her child's needs enough for these needs to be addressed (Winnicott 1991). The application of this hefty background of material has been increasingly explored within music therapy.

There have been many parallels drawn between music therapy and the theoretical background of interpersonal relationships. For example, Levinge describes the way that during musical performances, the inner self is never quite revealed, much like Winnicott's description of the conflict between the desire to communicate and the desire to remain private (Levinge 2015). However, Levinge also explains how music has the capacity to give shape and meaning to experiences and feelings which may be beyond words. Music can be a method of communication for those who struggle with expressing themselves, and therefore can encourage a more communicative relationship between two people. In this way, music therapy can be and has been used clinically to improve difficult parent-child relationships with potentially different forms of insecure attachment.

There have been both qualitative and quantitative studies into the effects of music therapy on parent-child relationships. One of the earliest quantitative studies into parent-child bonding is the Sing & Grow programme in Australia (Abad 2004). The programme has continued to generate evidence for the value of music therapy, and will be discussed in later paragraphs.

Various qualitative studies have also explored not just the parent-child relationship but also the role of the parent within music therapy. One study focused on the perception of parents taking part in music therapy with their children and found that many were initially unsure of what they were expected to do (Oldfield 2011). When the perceived aims of music therapy were further explored, one of the benefits found was that parents felt they were learning ways of non-verbal communication to better interpret their child's music ideas and allow the maintenance of an interesting dialogue.

The current literature available contains a wide range of foci. One paper focuses on "marginalised" parents and their children and use of music therapy to promote "positive parenting" (Nicholson 2008). They used the Sing & Grow intervention, following a 10-week, weekly session structure and used both questionnaire and observational data to assess the potential effectiveness of early intervention in parent-child relationships. They found significant improvements for clinician observed measures, self-reported irritable parenting and parental mental health, use of educational activities in the home and child communication and social play skills. However, despite the positivity of the results, there was a low attendance rate, with only around 53% receiving the minimum therapeutic dose of 6 sessions. Variation in group sizes may also have affected the "dose" of therapy delivered during the sessions. There was also no control group to compare results. Given the circumstances, it is difficult to discern whether a set music therapy programme is necessary for a perceived benefit, or whether there may simply be positive effects arising from group activity.

Another focus of research is the effect of music therapy on relationships involving emotionally neglected children or parents with a trauma history. In a study involving parents exhibiting signs of emotional neglect and children without developmental deficits/diagnoses, the effects of 10 weekly music therapy sessions were compared to a control group receiving their usual interventions (Jacobsen 2014). While there were improvements in interaction, mutual attunement and non-verbal communication, between groups analysis shows no effect of music therapy on attachment score, with authors explaining this as being due to the complexity of attachment. They suggest that because attachment is related to the parent's sense of emotional closeness to the child and ability to observe and understand the child's needs accurately, music therapy sessions may not have adequately tackled all of these factors. While parent child interactions improved, the fundamental ability of the parent to understand their child was not significantly affected. Instead, parents may have gained skills in reading non-verbal cues without changing their fundamental communication framework.

For parents with a trauma history, music therapy was able to improve the responsiveness of parents and

reduce their reactivity in conflict with their children (Colegrove 2018). The adolescents were also helped to be more emotionally regulated and positively engaged. The parents improved in non-verbal communication, potentially due to an increased understanding of adolescents' non-verbal communication, and parents were less likely to interpret signs as being abusive. However, self-report questionnaires were used to measure the outcomes and so could be open to bias. If the parents were expecting change post-music therapy, they may report a more positive set of answers compared to before they started the therapy course. The authors also state that their "Tuning Relationships with Music" programme focuses on non-verbal communication. This potentially limits the degree of benefit gained from the sessions, especially when parents who have past experiences of interpersonal trauma may not have good models of how to interact verbally with their children.

The disability demographic has been most thoroughly researched in terms of music therapy and parent-child interactions, with many subject groups involving children with autism. One study found that the Sing & Grow programme improved communication and social skills of autistic/disabled children, parenting sensitivity, engagement and acceptance of child, child responsiveness to parent, and child interest in program activities (Williams 2012). A different study found that their programme (Musical Bonds) improved parental responsiveness and child-initiated communication, as well as parent-child synchrony (Yang 2016). While the data for parent-child synchrony showed ceiling and floor effects that may have limited the efficacy of the programme, it is possible that in groups where parent-child interactions may be difficult and improvement may not be limited by the child's social ability, e.g. insecure attachment, the Musical Bonds program might be more successful.

The short and long term benefits of music therapy on parent-child relationships involving children with severe Autism Spectrum Disorder (ASD) has been studied using quantitative and thematic analysis (Thompson 2013, 2017). 16 weeks of "family centred music therapy" found no significant effect of treatment as measured by the quantitative relationship inventory but did find positive changes through qualitative themes. More than half the parents described being able to "see the child rather than the autism" after therapy. They also found they were "actively seeking engagement" opportunities with their child and felt positive shifts in their emotional responses (Thompson 2013). Four years later, the parents' perceptions followed five global themes: more confidence to engage their child; rare opportunities for mutual enjoyment; improved child social communication and quality of life; mothers' new understanding of the child's interests/strengths; and more opportunities for continuing the child's interest in music (Thompson 2017). The

benefits of music therapy might be explained by the formation of rehearsed communication between parent and child. Having a pre-existing routine for parents and children to interact may not only benefit children with a disability or autism, but also many other parent-child dyads (Pasiali 2012).

Music therapy has also been used to help maintain a healthy relationship between parent and child in families where bereavement threatens attachment. One study performed thematic analysis on song lyrics written by parents diagnosed with cancer and music therapists for their children (O'Callaghan 2009). They found recurring lyrical ideas such as love, grief, and suggestions about to whom the children can turn. Overall, there was an emphasis on the importance of children maintaining secure attachments with their parents even through the transitional process of bereavement. They promoted child resilience, with the songs providing support for children as "they attempt to endure the cancer trajectory and adjust to whatever life unfolds." The study suggests how music therapy may influence the parent-child interaction even when the role of a healthy attachment extends beyond physical presence.

There are additionally two different approaches to studying interpersonal interactions. First, music therapy has an effect on cross generation attitudes, which could have applications in attachments to other family members. Children gained a more positive view towards aging, and adults living in a retirement facility experienced improved attitudes towards children after participation in an intergenerational music programme (Belgrave 2011). The second is a study on how patients with borderline personality disorder (BPD) differ to controls during musical improvisations (Foubert 2017). They suggest that BPD may affect the ability to improve and maintain synchrony over time. Controls' synchrony with the music therapist increased with time whereas that of BPD patients did not. This effect was only visible in the less predictable section of improvisation, which the authors hypothesised brought out insecure attachment systems. However, it is unclear whether an insecure attachment leads to the formation of new strategies of interaction, including increased impulsivity; or whether impulsivity leads to formation of insecure attachment. The study gives an insight into the mechanisms by which different attachment classifications might present in music therapy sessions.

A pilot study

In the literature, there is a recurring theme of improvement of non-verbal communication and also the development of interaction scripts that parents and children could use outside of music making in the literature. Currently, tools such as the Assessment of Parenting Competencies have been developed for use in the study of parent-child interaction within music

therapy (Jacobsen & Killen 2015, Jacobsen SL & McKinney 2015). However, such a tool could not be used for this study's design as we were not in a position to do additional assessments on the relationships of the families whose videos we used. To explore the possibilities, a pilot study into a potential method for analysis was carried out, with the hope that future studies might further examine the effects of music therapy from an attachment perspective. The study follows a qualitative structure initially to determine what themes to compare across the parent-child dyads, before employing a quantitative approach to explore the exact differences between each interaction profile.

METHODS

Participants

Three parent-child dyads, two of which were twins, were newly recorded at The Croft Child and Family Unit participating in a music therapy session. Participants gave written consent to the use of their recordings for research purposes. Session length varied between 30-45 minutes. These videos were transcribed fully, making note of all non-verbal communication, facial expression and tone of voice of participants. This included the exact words used in speech or an approximation of the words 'babbed' by the child, and any actions the participants engaged in, with the expectation that any section of the video could be enacted from what was written down. An excerpt from Eddie's transcript is included in the appendix. This was then used as a guide for producing transcripts of two previously recorded sessions of another parent-child dyad spaced three weeks apart after having one 30-40-minute session per week with the music therapist. The precise details and diagnoses of the participants are given in Table 1. All names have been changed to preserve anonymity.

Analysis

The transcripts were reviewed for recurring themes of non-verbal interaction. The choice to focus on the structure of the interaction rather than the content of speech was due to the descriptive nature of the transcripts and the largely non-verbal nature of each music activity. There were seven themes applicable to Ralph, Eddie and Randall's transcripts, with a different set of six for Lucy due to the age and underlying diagnosis discrepancy. Because of Lucy's older age, there was lower emphasis on keeping her engaged with music therapy, which was difficult for the younger participants. Instead, the challenge faced by the therapist was Lucy's lack of engagement with mother, and so it was deemed appropriate to use different themes. Each theme was then assigned a colour, with plain black text representing all other "un-themed" text. The themes are listed in Table 2.

Table 1. Participant information; ASD = autism spectrum disorder

Participant	Age (years)	Gender	Parent present	Diagnosis
Ralph	3	Male	Mother	ASD and behavioural problems (e.g. temper tantrums), showing signs of learning disability
Eddie	4 (twin of Randall)	Male	Mother	ASD
Randall	4 (twin of Eddie)	Male	Mother	ASD
Lucy	11	Female	Mother	Asperger syndrome

Table 2. Recurring themes of interaction

Single time point interactions	Two time point interactions
<ul style="list-style-type: none"> ▪ Red = mother and child physical imperatives e.g. mother moving child's hands onto instrument ▪ Orange = distractedness i.e. child, all other actions ▪ Yellow (highlighted) = mother imperative speech ▪ Blue = mother and child non-imperative speech ▪ Pink = mother and child positive engagement in therapy ▪ Green = child comfort seeking behaviours/mother physical reassurance ▪ Purple = adult (therapist/mother) anxious behaviours 	<ul style="list-style-type: none"> ▪ Red = Lucy blocking/hostility towards of mother ▪ Orange = mother tries to engage Lucy e.g. verbally or body orientation ▪ Green = mother follows Lucy's cue ▪ Blue = Lucy takes a cue from mother ▪ Pink = Lucy's body language warms up towards mother ▪ Purple = Lucy and mother eye contact/direct engagement with mother

MUSIC THERAPY SESSION CONTENT (%)

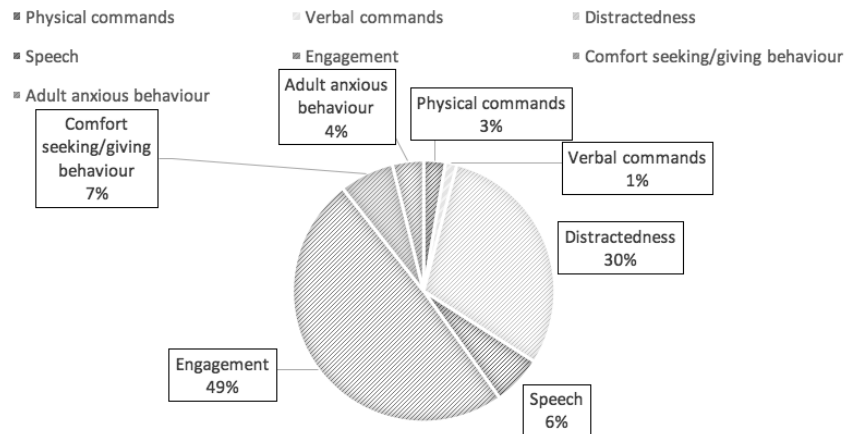


Figure 1. Ralph-mother interactions

MUSIC THERAPY SESSION CONTENT (%)

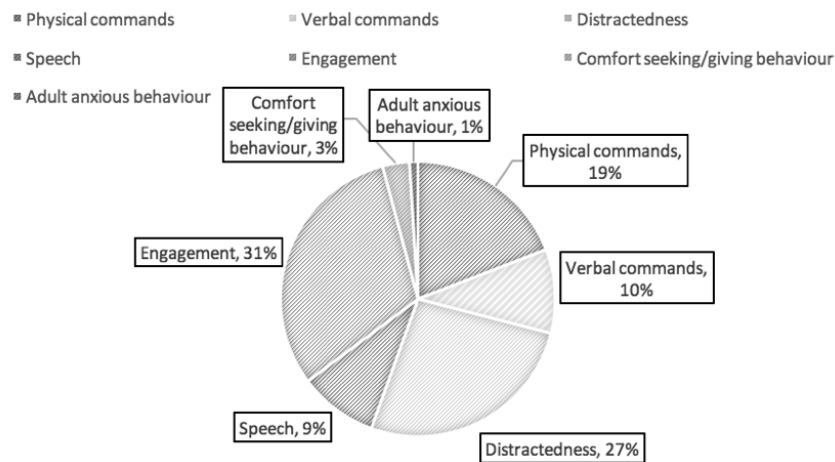


Figure 2. Eddie-mother interactions

MUSIC THERAPY SESSION CONTENT (%)

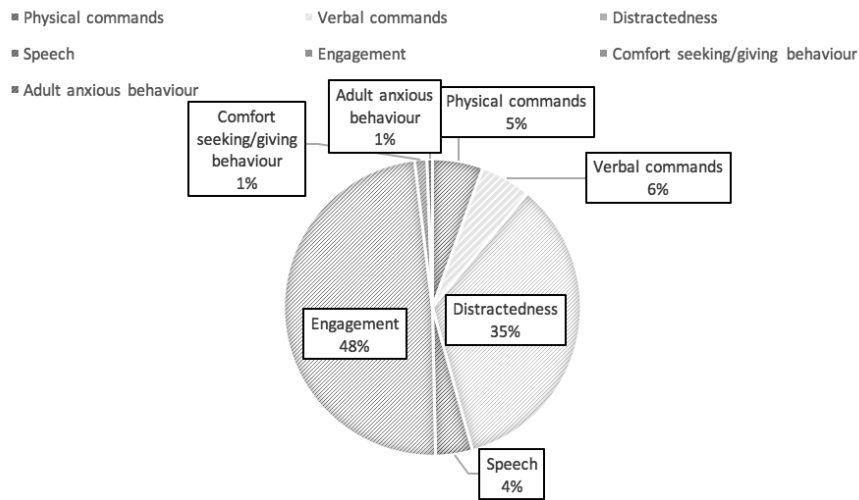


Figure 3. Randall-mother interactions

MUSIC THERAPY SESSION 1

- Hostile BL
- L takes M cue
- M takes L cue
- M tries to engage L
- Positive L BL
- Engagement

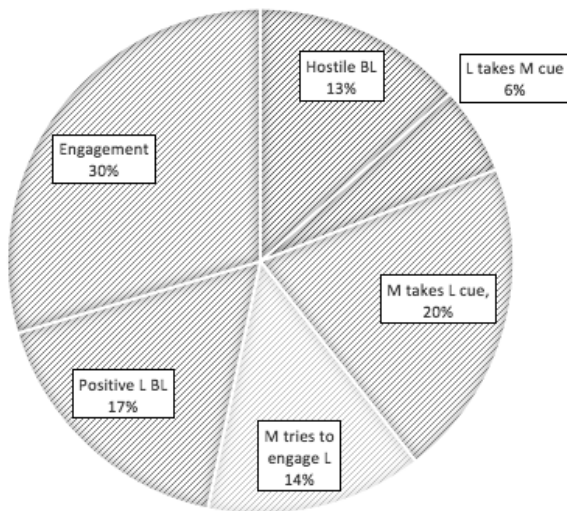


Figure 4. Lucy-mother session 1

MUSIC THERAPY SESSION 2

- Hostile BL
- L takes M cue
- M takes L cue
- M tries to engage L
- Positive L BL
- Engagement

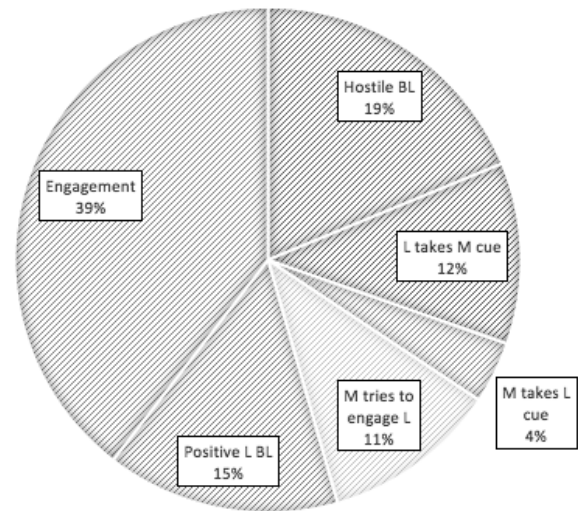


Figure 5. Lucy-mother session 2

Table 3. Raw participant data

Colour	Ralph		Eddie		Randall		Lucy session 1		Lucy session 2	
	Word count	%	Word count	%	Word count	%	Word count	%	Word count	%
Red	223/8285	3	921/4808	19	309/5606	5	121/896	13	199/1060	19
Orange	2481/8285	30	1274/4808	27	1940/5606	35	124/896	14	119/1060	11
Yellow	117/8285	1	474/4808	10	310/5606	6	N/A		N/A	
Green	559/8285	7	151/4808	3	75/5606	1	183/896	20	42/1060	4
Blue	508/8285	6	448/4808	9	225/5606	4	50/896	6	123/1060	12
Pink	4078/8285	49	1492/4808	31	2713/5606	48	153/896	17	158/1060	15
Purple	319/8285	4	48/4808	1	33/5606	1	265/896	30	419/1060	39

The colour coded transcripts were then converted to percentages of each colour compared to the whole transcript. This was done using the word count of each total colour sum as a percentage of the total word count of the transcript, as given by Microsoft Word. Eddie and Randall's transcripts were split into two individual versions with information related to solely the other twin removed. Twin interactions were retained. Pie charts were then used to represent this information using Microsoft Excel (Figure 1-5). Separate analysis was done for session 1 and 2 for Lucy's transcript.

RESULTS

The initial colour coding highlighted the different patterns of interactions for each participant. The most obvious contrast occurred in Eddie and Randall's transcript as they were both interacting with the same parent but produced very different colour configurations. The raw data (Table 3) and the pie charts (Figure 1-5) confirmed some of the initial impressions.

Ralph was generally engaged in the music therapy session for 49% of the time. He did receive the highest proportion of physical reassurance out of the single session participants (7% vs 3 and 1%). There was also a higher proportion of adult anxious behaviours (4% vs 1%).

Eddie and Randall both required a higher proportion of verbal and physical commands from mother to maintain engagement in the music therapy session than Ralph did. However, Eddie required much more than Randall (19 and 10% vs 5 and 6% respectively). Eddie also had a lower level of engagement than Randall (31 vs 48%), although he did have a lower proportion of distractedness (27 vs 35%). Eddie was more vocal than Randall (9 vs 4%). The comparisons between between the twins and Ralph confirm that colour coding according to common themes can detect different interaction patterns. The comparisons between Eddie and Randall suggest that this is not just a method of detecting differences in parenting ability.

Speech for all three of the single time point participants was limited since their language capacities were still developing, most of them using a mixture of babbling and one or two-word outbursts. Because of this, the content of the speech is less important than the frequency of interactions between mother and child, as the likelihood of the child or mother verbally interacting with each other is a better measure of their relationship at this stage of development.

The framework provided by the analysis of Ralph, Eddie and Randall suggested that Lucy's sessions could be analysed in a similar fashion. For Lucy, the charts were able to show a clear improvement in engagement (increase from 30 to 39%). The data also confirmed the increased incidence of Lucy taking mother's cues (6 vs 12%) and this was also accompanied by a drop in mother taking Lucy's cues (20 vs 4%). These two

measures indicate a shift in session 2 towards a more mother-led framework. The proportion of positive body language exhibited by Lucy and the proportion of time mother attempted to engage Lucy in music roughly stayed the same (17 and 14% vs 15 and 11% respectively). However, hostile body language increased in the second session (13 vs 19%).

DISCUSSION

The results from this method of analysis were able to show clearly distinguishable patterns of parent-child interaction such that each child had an interaction profile. Despite the different set of themes used for the analysis of Lucy's sessions, there was no difficulty applying the same method.

The higher proportion of comforting seeking required by Ralph could be suggestive of a lower degree of separation from his mother in terms of identity, but this could be normal behaviour for a 3-year-old compared to 4-year-olds. Without a baseline proportion for each age group, it is difficult to comment on just how "normal" this is. The greater proportion of adult anxious behaviours and increased need for physical reassurance, could be suggestive of an anxious attachment pattern, and/or an anxious internal working model in Ralph that was quickly reflected by the music therapist in their 30-minute session. Given how rapidly the anxious mother-child relationship was mirrored by the "music mother"-child relationship, it seems likely that Ralph's way of interacting with objects around him and their subsequent responses to him are highly fixed and easily replicable.

From Eddie and Randall's data, it is possible to see both the differences and similarities between the twins when compared to Ralph. The twins required many more commands from mother to focus their attention on the music therapy tasks but the number for Eddie exceeded those for Randall by a large proportion. What is not shown by these charts is the competition for mother and the music therapist's attention between Eddie and Randall. Randall's distractedness usually arose when mother or the therapist had turned their attention to Eddie. Having a shared session means that the relationship data only applies to that particular shared context but it is likely that this is a true measure of the relationship; at home, the twins are also likely to have to share their mother's attention.

The effects of 3 weeks of regular music therapy sessions for Lucy were mixed. Lucy appeared to tolerate mother's music ideas more. However, hostile behaviours from Lucy towards mother grew. This was accompanied by a decrease in the times that mother took Lucy's cues. Part of this may be due to the structure of the second session, as the music therapist deliberately instructed mother to lead music play. The changes may be explained by an increase in resentment, and therefore hostile actions, towards mother as she

may have interpreted mother leading the session as mother being less attentive to her, but the increase in engagement suggests that after a period, Lucy was able to accept her new role in the musical relationship, thus choosing to maintain this form of social interaction rather than reject it. After three weeks of music therapy sessions, Lucy and mother's interaction profile seemed to shift from a relationship where mother was largely compliant to Lucy's needs towards a more reciprocal and equal style. While this could reflect a greater confidence in mother's role as parent and therefore boundary setter, any interpretation on the power balance present in the relationship may be speculation without interviewing the participants.

Future studies could include an interview with the parents after each session to ask how they felt their children engaged, what might have contributed to the child's level of participation and how they feel about their relationship with their child. This would aid in the interpretation of data and would be easily achievable since it was usual practice for the music therapist to include a feedback section at the end of each session. Future studies could also analyse the patterns of themes within a transcript. The sequence of colours for each session could be used to determine the frequency of different patterns present. For example, the frequency of verbal imperatives followed by engagement in the session could be compared to the frequency of physical imperatives followed by engagement. This could provide an insight into which type of parental intervention was more effective. It would also aid in finding patterns of parenting that are perhaps necessary to a good parent-child relationship e.g. perhaps periodic hugs may encourage Ralph to engage more.

There is potential for application clinically, although too labour intensive to perform for every music therapy service user. Using the transcript of a short session to generate a simple chart could allow parents to see how what behaviours are most prominent when they engage in a joint activity with their child, and it would be possible to show them how these patterns have changed over time with the measure of active engagement being a marker of how successful various changes have been. However, it would still be beneficial to review the recordings of sessions with parents, as is currently done in clinical practice.

Limitations

There are many limitations to this pilot study due to the small number of participants, especially in terms of the two time point participants. There is also a large discrepancy in the ages and underlying diagnoses. In addition, as there was only one researcher producing the transcripts without back-up checks to ensure the transcripts were reliable, there could be a degree of bias arising from the perspective of the transcriber. However, the objective of this pilot study was to

produce a method of analysis for the study of parent-child relationships, and the study of effects are a secondary aim. A framework for future studies has been produced which reflects the parent-child interaction pattern and allows easy comparison within groups and between groups.

There are also some limitations to the method of analysis. Firstly, different emotions and themes maybe be expressed in more or less concise methods and so analysis of parent-child interaction via word count might not be the most representative method. For example, a parent may spend more time engaging a child in play than they would giving commands to regain their attention. The word count may form an accurate representation of what formed a greater proportion of the session but this may not be representative of the subjective experience of the parent and child, who may ascribe more prominence to the times that sharp words were spoken. This can be addressed by including a post session interview to help with interpretation and weighting of various themes.

There is a certain amount of bias generated from the flexibility of language used during transcription of the videos. For example, one of the musical activities in Lucy's second session involved a "conversation" using kazoos. When describing this scene, the language tended to be more poetic in order to be more specific about the tones generated. While this author believes that this was justified in the pursuit of accurate representation, such an activity understandably has a higher word count than a simple drum beat exercise due to ease of description, which suggests closer defined parameters are necessary in future studies for what is included within music therapy sessions.

CONCLUSION

The number of studies specifically relating to music therapy's effect on parent-child interactions is still limited and combining these studies meaningfully in a meta-analysis would be difficult. However, they largely show the benefits of music therapy on the parent-child relationship, especially in terms of parents gaining understanding of their children and how to communicate with them. The pilot study hopefully provides one example of how qualitative and quantitative approaches can be combined to produce a tailored parent-child interaction profile. Preliminary investigations into the effect of music therapy on parent-child interactions suggest that it might address potential power imbalances in the relationship when a difficult child is involved but at this stage of the study, it is difficult to draw firm conclusions. However, it does suggest what parenting techniques would be beneficial to each individual child. An extension with tighter study parameters would hopefully tackle the question of exactly what are the effects of music therapy sessions in this context.

Appendix

Excerpts from Ralph's transcript: a hello song

A = music therapist, R = Ralph

Two chairs are positioned beneath the window next to a piano.

R runs in and sits on left chair.

A: [*Exaggerated speech*] Look at you sitting down (*R giggles*). What a good boy. Let's show mummy. Look at this boy sitting on his chair. (*R stands up, both hands up in the air and a single laugh explodes out of him. Sits back down*). Yes. Aren't you clever? Aren't you clever? Shall we start?

R grins and holds out his hand to mother and she walks in, takes his outstretched hand and sits down next to him on the right chair.

A picks up guitar and sits cross-legged on the floor in front of R + mother. She shuffles in closer.

R leans to the right, onto mother.

Mother: Sit up! [*kindly*]

A puts a finger to her lips to indicate R should be quiet. Gently strums guitar. Mother makes shushing noises.

A: [*Singing Hello song*] Hello from music. Hello, hello. Hello for sitting down R today. Hello for sitting down – (*R gestures and holds out left arm to the side*) – Ooh! (*A reaches out, gestures at R's top and asks "What's that?"*) Hello (*R stands up and takes off jacket*) for motorcycle R today (*R plonks back down on chair*). Hello (*mother takes jacket off R, puts on lap, A reaches out and points to R's top again, takes hand back*) [*exaggerated speech*] that's motorcycle R! [*Singing*] Hello, hello today.

A: [*Slightly exaggerated speech*] That's motorcycle R. Let's see R's special way of playing (*puts guitar flat on R's lap, R put's hands on shoulder of guitar, reaches out and rubs flat of hand and fingers underneath strings while A strums strings gently.*)

**For full transcripts, please contact the corresponding author.*

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Contribution of individual authors:

Shentong Wang carried out the literature search, analysis and drafting of this paper;

Amelia Oldfield provided the recordings and oversaw the development of this project.

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