

The UHI Millennium Institute / HI~Arts Lectures

We are all musical: the importance and potential of music

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1. Introduction and Context

1.1 Context

We are all musical. Every human being has a biological, social and cultural guarantee of musicianship. Of course this is not a new idea and it has roots in educational and medical practice that date back to ancient Greek civilisation and probably beyond. Moreover, this notion is not a vague utopian ideal but rather a conclusion drawn by an increasing number of academic researchers involved in investigating the foundations of musical behaviour. It appears that the earliest communication between a parent and a child is essentially musical and, more specifically, improvisational. We can indeed sing before we can talk. Indeed, to respond emotionally to music may be one defining feature of our humanity. My point here is that music plays an absolutely fundamental role in the earliest and most important relationship that we form in our lives, the relationship with our parents. The early bonding process between a baby and a parent is crucially influenced by music and musical improvisation and I'm going to come to improvisation a little later in the lecture. In that sense we all have a musical identity because at that crucial point in our lives we were communicating musically and improvising with it with our parents.

1.2 We all have a musical identity

If you ask a young person to tell you a little bit about themselves they may tell you their age, they may tell you where they live, they may tell you what they study but right at the top of that list they will tell you what music they like. They will use music as a badge of identity to signal to the world who they are. If you look at Zillman and Gan's 1997 paper they showed that in terms of where young people socialise, the clothes they wear, the magazines they read the friendship groups that they socialise in, music plays an absolute crucial role in all of these processes. In fact Zilman and Gan suggest that music is the most important recreational activity that young people are engaged in.

So music is a huge part of a young person's identity. We are currently doing some work at Caledonian University looking at music through lifespan to see to what extent does music remain a crucial part of a person's identity in later life and how does their musical identity in terms of taste, develop and change over the course of their lifespan as well. What we are finding is that certainly an older person's tastes become broader, become less affiliated to a particular genre of music but the notion of music

having an influence on peoples identity we ran focus groups and asked them to talk about themselves and quite quickly music comes into the conversation. Music was still being used as a way of signalling to the world who we are. So in that sense as well, we are all musical we all have a musical identity. I'm going to go on to talk about musical ability in just a couple of minutes and about my work with people with special needs showing how with the right type of intervention people with special needs can develop basic music skills.

1.3 Musical Communication

So, that's just three possible ways of thinking about musical identity but there are actually countless ways of thinking of our musical identities. As well as music playing a crucial role in identities it can also be viewed as a fundamental channel of communication, a different channel, separate from language. Music can facilitate the sharing of emotions, intentions and meanings, even though spoken language is maybe mutually incomprehensible. So for example, if you are on a beach at Hogmanay with people with lots of different nationalities who may not speak English, they can all get together and sing some Beatles songs and unite through music. Not through the language but through the sense of unity that singing songs provides. We can communicate emotions intentions and meanings through music.

Also music can provide a lifeline to human interaction for people who can't communicate through language for whatever reason, or, for people that have problems communicating through language music can provide a fundamental lifeline to communication. The profession of music therapy now has 60 or 70 years of musical research looking at the process and outcomes of music in a clinical setting and the way in which music can operate in these very particular clinical settings. Also, there is extensive evidence of the powerful physical effects and deep and profound emotional effects that listening to music can have and playing music can have.

For example, looking at the work of John Sloboda at Keele University on music and emotion. He documents the vast number of ways in which music has a very profound effect upon us emotionally and the different ways in which music can affect our emotions. But in this context I'm talking about music as a fundamental channel of communication. So not only does music play a crucial role in our identity construction and our negotiation of our identity but music is also a fundamental channel of communication and it plays a very important role in communicating emotions. Individuals who are involved in musical participation develop personal identities that are intrinsically musical.

1.4 Identities in Music

By that I don't just mean professional musicians, I don't just mean someone who is an opera singer develops their identity as an opera singer. Also regardless of what your musical involvement is you have an identity as a musician. You might say 'I just sing in the bath' or 'I play a few Bob Dylan songs on the guitar' but once you are involved in any kind of musical activity you start to develop a sense of yourself as a musician. Another important point to note is that the identity of being a musician is a socially and culturally defined concept, it is not that someone goes to university or goes to college and gets a degree in music, gets a job as a musician and then adopts the label

musician, the way in which a medical Doctor may go to university, study for many years then eventually, after practicing and studying, they are allowed and conferred the title Doctor and are then able to call themselves a medical doctor. We don't acquire the label musician after the attainment of advanced technical skills. It is not that we practice and practice and get better and better technically and get better at playing music and then suddenly confer the label musician on ourselves. It has much more to do with the way in which our social and cultural surroundings are constructed and the way in which we relate to people around us.

For example, we have interviewed people with degrees in music who spend much of their life playing music but do not see themselves as a musician, because they may say 'well actually my father was the conductor of the Berlin Symphony Orchestra, he is the musician in the family', and although they have been playing music for 30 years they will not see themselves as a musician. So people with very advanced musical skills don't see themselves as musicians because there is someone else in their life who is "better" than they are or there are factors that necessitate them not to call themselves musicians. On the other hand we speak to 12 year old kids who don't have any formal education in music but have a band that practices in the garage every night they are "musicians". That is their life, they are a musician now and they are going to remain a musician so they have taken on the label 'musician'. The key point here is that we are talking about the notion of a musician as a socially constructed label and not something that you just acquire after years of practice. There is also, as I have started to suggest here, the notion of being a musician as influenced by certain non musical factors, what we have labelled identity paradoxes in the book. The way in which the family is constructed has a huge influence upon how we see ourselves as musicians.

Borthwick and Davidson studied one family over a number of years and carried out lots of interviews with the parents and siblings. In this instance the eldest child who had been to music lessons for 12 or 14 years was seen as the musician in the family. The next child down who had also been to music lessons for 8 or 10 years and had very advanced musical skills, deferred musically to their older sibling saying 'actually my brother is the musician in the family, I'm not really as good as him'. So in that instance once again the musical factors are merging with the family factors. I cannot over emphasise the importance of that, because if you don't see yourself as a musician and you see your brother as the musician in the family then of course you are not going to pursue being a musician, you may want to be a musician but you will not have the confidence to pursue your musical skills to the extent that you might do if you felt much more of a musician. The way in which music is delivered in school is also hugely influential upon our developing musical identity.

Alexandra Lamont's work gives an example comparing 2 schools, one school where the kids are taken out the class to get peripatetic music lessons out the class elsewhere and the other school where the kids were all getting music lessons together in the classroom. I'm not using this example to advocate one way of teaching music or not but as a way in which to show how music is constructed in the school context and how this can influence a developing sense of identity but she showed that in the school where the kids were taken out of their class to get their music lesson, most of the kids who were taken out of the class certainly saw themselves as musicians but the rest of the class didn't as they were able to see their friends being taken out of the

class to be given specialist music lessons. Whereas in the school where everyone got their lessons together, many more of the children said 'yes I am musical and I am a musician' or were talking about themselves in a musical sense because they weren't seeing a small group of specialist pupils that were getting a lot more musical input than they were. So once again that is another way in which the social environment influences our developing sense of musicality.

We have also done some work with jazz musicians, interviewing jazz musicians and looking at the way in which their identity develops and how they see themselves and how they define jazz music. There are a huge number of ways in which a jazz musician is influenced by non musical factors. Jazz musicians see themselves as undervalued and not being paid appropriately enough for their concerts and being misunderstood. One of the defining features of being a jazz musician in the group we interviewed seemed to be that they felt people did not really understand what they were doing. They then use that as a way of sticking together and working together. I'll maybe come back to the jazz context later on.

2 Sounds of Progress

That is a kind of very quick overview of a number of theoretical issues relating to musical identities and relating to musical communication, emphasising the importance that music has in our lives and unpacking, in a little bit more detail, this notion that we are all musical. What I would like to do now is go on and talk about a number of research projects that shed some more light on this notion of us all being musical.

2.1 Aims and objectives

The first set of studies centres on my work with *Sounds of Progress*, a music production company based in Glasgow. They are an integrated music company who work with professional musicians and also with musicians and actors who have special needs. We sometimes have musical therapists working with us, we work in hospitals and school settings, we sometimes do music workshops in hospitals for developing basic music skills. We work in special schools, we also do recording projects and touring projects and there are a range of musical and social aims around the company. I started work with sounds of progress as a musician working with Gamelan workshops, looking at developing music skills in a group of individuals with mild or moderate learning difficulties. My own anecdotal observations of a group I was working with for 6 months or so, was that they were making significant progress and I was wondering if it was possible to take a scientific view or to try and take an experimental view of what was happening at the workshops and try and investigate the process and outcomes of this kind of intervention in a little bit more detail.

2.2 Methods

So this slide outlines the design of an experiment where we investigated the process and outcomes of Sounds of Progress's activities'. We had 60 participants. All the participants were resident at the time in a large hospital. The hospital has since closed down. They all had mild or moderate learning difficulties. We had 20 participants each in three groups. The group who were coming for Gamelan workshops once a week for 3 months, an intervention control group who were experiencing an intervention every week for 3 months but they were doing group activities that did not involve any music. They were doing cooking classes in the occupational therapy

department, and then we had a non intervention control group of 20 individuals drawn from the same population but who didn't have any kind of special intervention relating to what we are doing here. All participants in the groups were assessed before and after the sessions on musical ability, communication skills and self perception of musical ability. Everyone was interviewed and assessed on their basic music skills, particularly rhythm and pitch. We also used a communication assessment profile used by speech therapists to try and quantify people's communication skills. We also asked them questions about their self perceptions about their musical ability.

2.3 Results

After the 3 months we found that in the experimental group there were significant improvements in musical ability. We were able to show statistically that the group of people coming to the Gamelan workshop got better at playing music in comparison to the other 2 groups that didn't have the intervention. Interestingly their communication skills also developed. Using the communication assessment profile, there was a result in development in communication skills over the 3 months and they were related to the music skills. The better they got at music the more their communication skills seemed to develop during this particular study. There was also some appreciable notion of a development in self perception of musical ability as well in the group that took part in the music sessions. So we used this as an example of a) we are all musical in the sense that we can develop basic music skills with the right type of intervention b) music can have other effects being involved in playing music not only can improve music skills but it can also improve communication skills for this particular population.

2.4 A Qualitative study

That was an experimental study where we quantified the notion of musical ability in one or two discreet variables – either rhythm or pitch and we also boiled down communication skills to a very discreet measure of communication. It was clear to me that there was a lot more going on at the workshops than just these very discreet variables. It wasn't just that the participants were developing rhythm awareness or their ability to label and talk about a photograph. We wanted to try and get some purchase on the wider developments that were being made or the meaning that music had in the lives in the people involved in 'sounds of progress' activities. So we tapped into qualitative research. If you think of that first study as coming from a quantitative background an experimental and empirical background. This particular study comes much more from a qualitative background using the social model of disability and a social constructionist view of identity, that is that our identity is constantly evolving, constantly being negotiated, that all our experiences are very different and subjective and therefore to get an understanding of an individual's personality we need to take a more subjective and holistic approach to studying personality.

So we embarked on a qualitative study that was a number of structured interviews with participants, in depth interviews with a small number of participants who had all been involved in sounds of progress activities for a number of years. These interviews were tape recorded and transcribed and through repeated listening, we looked at the themes and the issues that emerged from these interviews. We got the interviews transcribed, a number of researchers read them, we coded the interviews,

we refined the themes. We thought, what are the sort of things that the people in sounds of progress are talking about? Rather than saying, what do we think is important in music? we said let the participants tell us what they think is important in music, lets not have any preconceived ideas and give voice to the participants at the workshops when they can tell us what is important in music.

Let's look at a couple of these themes couple of the themes just now. "I remember I used to go up in the ambulance to the hospital years ago and there was this old woman who was always complaining about her illness we used to call her 57 varieties. She always used to say about me 'you know he's in a wee world of his own and your sitting listening. Your sitting listening oh aye I'm in a wee world of my own here'. Then again that same old woman I started a sing song in the ambulance one time she started to talk, she started talking to me normally. You know what I mean? so there you go she forgot about the world of my own and when a sing song was started she changed." The key point here would be that being involved in musical activities changes how other people view you and we saw this time and time again in the transcriptions. People talked about playing music, whether it was performing or recording but when people started to play music the outside world's view of that individual changed. That had a very strong effect on their self concept and upon their sense of identity.

Secondly the notion of professionalism. "When people spoke to you they weren't giving you the sympathy vote anymore you know I thought well I must be doing all right you know, you didn't get all that pat on the head and all that 'very good son'. Then you stop to think well these disabled folk, what can they do? Well I think they get rather a shock when they hear us. Then when things started to get a wee bit professional I thought this can't be bad".

When you guessed that means when he got paid. As people developed their skill, we tried to make sure people got paid for their performances. But the key point here is the professional approach to 'Sounds of progress'. If participants are going to go and record and going to go on tour, a few years ago the band went on a theatre tour with a professional theatre company. Then there is an expectation that they are going to be contributing in a not patronising way. So you are giving people the chance to develop skills to a high standard. This seemed to have a very important effect, this non patronising way of working with people and they expected people to contribute significantly to the musical process and when they delivered it had a very powerful effect upon their sense of self.

So, what I'd like to do now that I'm half way through. I'd like to have another little clip of music. So I told you about the Gamelan workshops but 'Sounds of progress' work in a lot of different ways. A few years ago we recorded a cd and what I'm going to play is just a little bit from a track that has parts of the Gamelan orchestra in it, it has school kids in the horn section, the song it written by a musician with cerebral palsy and there is a whole range of people in this group with different types of special needs. They had rehearsed the music for a number of weeks before we went in and recorded it. Just by way of bringing it to life a little more listen to a couple of minutes of one of the tracks of the songs to let you hear one of the ways in which sounds of

progress works. (music plays). That's just to give you another example in the way in which sounds of progress work.

3 Researching the Arts in Scottish Education (RAISE)

I'd like to move on now and talk about arts education, music education in a wider context in relation to a study carried out last year, supported by the Scottish executive.

3.1 Background and method

We were looking at the way in which art provision is delivered in schools. We wanted to explore the views of teachers on a range of issues relating to the teaching of the arts in primary schools and the first 2 years of secondary schools. We had 6 focus groups and 232 questionnaires were completed by teachers around Scotland. I'm going to spend about 5 or 10 minutes on this, the whole report is actually on the Scottish executive website. There is growing interest in the arts in an educational context and there is interest in the way in which the arts are delivered, in particular music. We wanted to find out teachers own thoughts and views about how arts are delivered in an educational context and what they felt were good points and bad points about the arts. I'm just going to give you another couple of quotes and a couple of broad themes from this particular study.

3.2 How the arts are valued

So once again when we looked at all the focus groups and we analysed the themes of the focus groups and we discussed the way in which the teachers were talking about the arts, one of the key themes was how the arts are valued in a school context. Participants without exception, and remember these aren't teachers who are music teachers or drama teachers, most of them are primary school teachers who have a responsibility for delivering all aspects of the curriculum, they all reported that they saw arts as having a fundamental importance for schools. 'It is important that every child has a meaningful creative and aesthetic experience throughout their school career, from primary 1 until they leave and there should be a core experience'. We felt that this quote typified what the teachers were saying and the importance of the arts should have in a school context. Particularly in primary school there was a tension, as whereas the teachers saw the arts as being of fundamental importance they also saw the arts as being the first thing to suffer within the curriculum.

"the thing is with maths and language we've got to teach it, that's we've not got a choice whereas, music or other... then it's: just can't do that this term" If there was any stress or any difficulty with timetabling it was always the arts that was the first thing to go and the teachers felt that they had no choice because of the way in which the curriculum and timetable was developed. However, they spoke about the benefits of being involved in arts in terms of a growth in self confidence and self esteem, social communication skills, emotional intelligence and being able to articulate individual thoughts and feelings.

3.3 Benefits of the arts

The teachers at all the focus groups spoke of a whole range of benefits of being involved in arts activities that were seen as crucial to a child's development. This

quote reflects this ‘I say to my children that I can’t think of any job, any university course, any college course where drama will not help you. It will be vital for some things but will help you with everything and I also say to them that even if you were never to work in your life you still need these skills, you still need to deal with your family, to deal with your friends and to deal with officialdom’. So the teachers were talking about that whether its drama or music, that the skills that are implied in developing and experiencing the arts were very important life skills that people would take with them through their lives into lots of different situations.

3.4 Teaching the arts

The role of specialist teacher was seen as absolutely fundamental and there was a tension again where many of the teachers said that ‘although I’m supposed to be teaching drama, music, art and physical education, I don’t feel I have the skills’. It was significant anxiety about teaching in all facets of the arts and this is where specialist teachers were seen to be important.

In a way there are 2 kinds of extremes we are talking about. Very good high quality visitors and places they can go. We are talking about the basic delivery of the arts. In between there are problems with many teachers not happy and confident teaching all 4 expressive arts areas, sometimes 1 or 2 attempt to go through the motions a bit, I think we need to improve the basic delivery of teaching of expressive arts within the schools. So this was a head teacher talking in one of the head teacher focus groups saying that what seemed to happen was that schools would develop informal arrangements where one teacher might take 2 or 3 classes for music because a particular teacher didn’t feel they were equipped. But it raised the issue that many teachers don’t have the confidence, don’t really have the skills to be teaching all aspects of the arts but at the same time seeing the absolute fundamental importance of the arts in an educational context as well. So once again this suggested that we need to address the way in which teachers are trained to deliver arts education in a particular context.

3.5 Assessment and accountability

There was concern about assessment in the arts. You’ve got this head teacher breathing down your neck saying ‘where is art at level D? These are primary 6 children, why are you doing sponge painting? If the inspector comes here next month he will have to see this, you have got to prove it, it’s all about proving’. So the teachers felt anxiety about being able to assess the arts. It is notoriously difficult to assess the art but there is pressure from above in terms of inspectors and meeting curriculum guidelines. Most of the primary school teachers we spoke to talked about this constant tension about exploring creativity gaining arts just to get the children experience of the arts and then meeting the curriculum signposts, there was a tension.

3.6 The value of improvisation

I want to talk about 1 particular aspect of arts education in a school context because as we got into more detail with the teachers and we looked at music as a particular example, it became apparent that teachers had concerns about how to teach creativity in general and improvisation in particular. This isn’t just evidence from this one

study from the Scottish executive but I've been involved in a number of studies where we have done interviews and questionnaires for teachers looking at the development of creativity in an educational context, particularly in a music context. Teachers are uncertain about teaching creativity, how best to foster creativity and in particular improvisation. Improvisation is an underused musical resource in an educational context. If we go back to the start of the lecture where I said 'we are all musical, we are all musical improvisers and particularly if you think of the way in which a child first experiences of music. A child's first experiences of music must by definition be improvisatory. To pick up an instrument, to pluck the strings on a guitar or bang on the piano, they experience joy at the sounds this object makes and the way in which they interact with that object. It struck me when I've been involved in these 3 or 4 studies that after 20 years of fantastic musical education and developing all sorts of advanced skills, more than half of the teachers that we spoke to in our study said 'I don't improvise I'm actually very nervous about improvising, so not only do I not improvise as a teacher but I don't know how to develop improvisatory skills in the kids that I'm working with'. My contention is that actually improvisation should take its place alongside all the other skills that young people are developing when they are experiencing music. Once again am not using this as an example to point the finger at music educators or teachers. I'm using it perhaps as an example of the way in which improvisation is constructed within our society or within musical cultural life.

If we think of current conceptions of improvisation, improvisation is the highest form of art. This actually comes from this years Reith lecturer Daniel Barenboim. I was listening to the lecture on the radio and Julian Joseph, a piano player and broadcaster, asked Daniel Barenboim what did he think of improvisation. Straight away the response was 'improvisation is the highest form of art'. He then went on to give a very eloquent explanation of why he thinks improvisation is the highest form of art. Lets compare that with another academic discourse 'Improvisation is a parlour trick anyone can do it'. I don't know if any of you know where that comes from but its actually from Willy Wonka in 'Charlie and the chocolate factory'. It's from the new Willy Wonka film I'm afraid and not the original. I was watching it with my daughter and Augustus Gloop gets sucked up the tube out of the chocolate river and the Oompa loompas sing a song about Augustus Gloop being a naughty boy and getting sucked up the tube. Veruca Salt and the kids ask Willy Wonka 'How did you know that was going to happen? You must have known it was going to happen because the Oompa loompas sang a song that they must have composed'. Willy Wonka says 'No, improvisation is a parlour trick, anyone can do it'.

Now you might think that given my background I would much more adhere to Daniel Barenboim's conception of improvisation, but I think Barnbow's conception is problematical because it conforms to the elitist view that we have of improvisation. That in order to improvise, you have to have been learning your instrument for 20 years, you have to dedicate your life to being an improviser. I also think that most people see the way in which improvisation is constructed as the preserve of jazz musicians. That jazz musicians know how to improvise and in order to be an improviser you have to have experience and have developed your skills to a high level. I think that creates barriers for music educators, it creates barriers for kids the biggest barrier. One of the biggest ones I've come across when I am doing workshops with adults or kids and with very experienced musicians is that people are scared to make a mistake, 'I'm pretty nervous because I might play the wrong note'. One of the

first things that I try to put across is that there are no mistakes. If we are improvising, the first thing to do is to let people explore their instrument and to experience the joy that comes from playing spontaneously, playing something that comes into your head immediately and exploring your instrument and making connections with other people in an instantaneous way.

Now once again that is not to say that of course there are certain types of improvisation that do demand technical skill, that do demand years of study, that do demand knowledge of your instrument. However, there must be a way of constructing improvisation, delivering improvisation and of investigating improvisation that operates in a much more open and holistic way. I think there is a problem in terms of the way in which improvisation is thought of within music, that it is the preserve of an “elite”. If you think of musicians as being a cultural elite then improvising musicians are another elite of that group of musicians. I think we could be introducing improvisation right at the start of children’s musical experiences.

In fact on that note, the work I do with sounds of progress and another project that I’m involved in, a project called polyphony at Gartnavel Royal hospital. Gartnavel Royal hospital is a psychiatric hospital in the west of Glasgow and I’m collaborating with one of the psychiatrists there and the national lottery has given us money for a 3 year project where we introduce music into the hospital. So we have built a music studio, we have recording equipment and musicians are employed. Those musicians provide music workshops, music lessons, composing lessons and improvisation lessons. But the idea is that we are giving the patients at the hospital the chance, because some of them have had musical experience before some of them have played music and some of them haven’t. But that is not important, the important thing is that they want to play music and we give them the chance to develop their skills through music and improvisation is at the heart of that particular project. So what I would like to do now, I have a little clip from a workshop that we had last week. So this is the first time I had taken a workshop with this group of musicians. We have about 8 or 9 people here, all improvising. Now I’ve given some broad ballpark ideas, like play long notes, you can play whatever you want but try to play long notes. I’m also using some hand gestures to signal to people. So what I’m trying to do is give people the chance to improvise but also accept certain broad parameters so that I’m not just saying play whatever you want and let people get on with it. I’m trying to facilitate the improvisation, with the aim of trying to get people to make connections, to hear the music that is going on around them and to hear what someone else in the room is playing and to try and communicate with other people in the room using the music. So I’ll just play a little clip of that, once again to let you hear how that operates in a sort of workshop context.

So that is just another musical interlude but at once trying to bring to life the idea of how we can use improvisation with a group of individuals that have mixed ability, some people had never played music before. So the key point in this section is that there was an overview there of a project that investigated arts delivery in Scottish education. I gave you some broad themes that were presented and some of the broad conclusions of the study and then finished with a particular example of improvisation. Once again trying to draw this thread from the talk, we are all musical, we are all improvisers as well and improvisation can take a much more significant place in both music education and people’s musical experiences than it currently does. Once again

I'm not using that as a way of criticising other approaches, its just that I think there is space and a need for more improvisation within musical life.

4 An Empirical Investigation of the Anxiolytic and Pain Reducing Effects of Music

Ok so there has been a broad overview of musical identities, musical communication. I then presented some work from 'Sounds of progress' and then went on and talked about a project in Scottish schools. I would like to now go onto a more ore clinical setting and explore the notion of us all being musical in the sense that listening to music can have very specific therapeutic effects for us.

4.1 introductions

So this is an empirical investigation of the anxiolytic and pain reducing effects of music. That is listening to music in the clinical settings can reduce our experience of pain and anxiety. So, looking at the literature, music and medical treatments can be traced back to the earliest reports of mental practice. As I said at the start, music has been present in all cultures, there seems to be a relationship between music and healing, music and medicine in all cultures as well. The way in which it is realised depends upon the particular cultural context, but it exists. A study of American music therapists noted that 45% of respondents used music for pain management in hospital settings. That's just music therapists but the key point there is that within a music therapy context, many music therapists are using music for pain reducing purposes. It is written about quite a lot in anecdotal reports. Certainly I'm aware of people talking about the pain reducing effects of music or the anxiolytic effects of music, but really there is not a huge amount of evidence. There is a need for research that does investigate the sorts of benefits that we can get from listening to music in these settings. So that if you like was a sort of backdrop to this series of studies.

4.2 Music and pain perception: study 1

The first study involved 20 participants in an experimental group who listened to self selected music. It was really important they listened to self selected music, moat of the work in this area has taken pre selected, experimental selected music and said 'here is some classical music' or here is some conventional anxiolytic music, you know you get cd's with very sort of modal music that has been designed specifically for anxiolytic purposes, we wanted participants to bring their own music. Going back to that idea of identities, we all have strong relationships with particular types of music. I'm sure I could ask each person in the room and say 'tell me a song that reminds you of a very important happy time in your life' and we can listen to a piece of music and we can be transported to a particular time. So we wanted people to tap into this relationship, their personal relationships with particular pieces of music and bring that into the hospital setting. We had 20 participants in a control group; we compared participants who were listening to music after an operation with participants who weren't listening to music after an operation and all participants underwent a minor operation on their foot. They came into the hospital in the morning, they were having a minor operation on their feet and after the operation 20 people listened to music, and 20 didn't listen to music. I was actually carrying out all

the assessments, so for me part of the process was to actually test participants. I was in the operating theatre on a number of occasions to get an overview of what happened. I remember one time a woman I had met upstairs and I had said I was a psychologist and I was doing a study on music and she was very happy to take part. As she was in the waiting room and was ready to go for the operation, I came into the room and she had a look of horror on her face as she thought that maybe I was going to be involved in the operation in some way. I assured her I was merely there as an observer. But we wanted to compare the effects of listening to music in this setting.

So, what this graph shows is that in the control group who didn't listen to music the levels of anxiety in the ward remained constant the day of the operation. They came out of the anaesthetic and 2 hours, 4 hours and 8 hours after the operation the levels of anxiety remained constant. Quite high, not worryingly high, that's certainly above average in terms of this assessment. The key point here is that in the experimental group there is a significant decrease in anxiety. Listening to your favourite music in the hospital setting reduced the levels of anxiety in the ward after the operation. Now there was no difference in pain perceptions between the groups, there was an anaesthetist and a surgeon involved in designing the study as well and their conclusion was that actually following the operation the patients weren't feeling a lot of pain in both groups.

4.3 Music and pain perception: Study 2

So their idea was that we needed to find a more painful procedure and see if music had an effect on participants. Once again guided slightly by their advice the second study, all females and no music control group, both groups underwent total abdominal hysterectomy. The surgeon said that was a painful operation and that the post operative period is complex and painful. So a more significant operation and we took preoperative and postoperative pain and anxiety and patient controlled analgesia. In this situation the patients all have a pump where you can self administer morphine and it gives a very hard measure and we wondered if the people who listened to music would pump less morphine than the people who don't listen to music. It was a hope because there were no differences between the groups on the measures. Now I could spend half an hour discussing why that happened but I won't. All I will say is that we had 2 studies both with conflicting results and we made the decision to go back to the laboratory if you like, the psychology laboratory and look at the process in a bit more detail.

4.4 Music and pain perception: Study 3

At this point a student, Laura Mitchell started work on a PhD, looking at the effects of listening to music in laboratory settings. What you see here is believe it or not an ethical way of inducing pain in participants in a psychological laboratory. Before you get the wrong idea its not electric shocks, the hand is immersed in cold water and when the participant feels it is too cold they take their hands out of the water. We controlled the temperature very precisely, we did lots of pilot studies to get the right temperature where after a certain amount of time it does get surprisingly painful and participants take their hand out the water and stop the experiment. So they put their hands in the water and they listen to different types of music. They did it repeated

times. So there was 3 trials, white noise static from a radio, anxiolytic music, the music that I talked about earlier it was a sort of rain forest tape with gentle pan pipes playing over the top and then participants brought their own preferred music. We measured the amount of time they kept their hands in the water, the amount of pain they felt we asked them about their pain perceptions and how much control they felt over their environment, bearing in mind that being in a hospital environment can lead to a feeling of loss of control. We wondered if the music, bringing your own preferred music might increase your sense of control over your environment. So this is the results for tolerance, the length of time that people had their hands in the water. The key point from here is that the preferred music at the end there, that part is significantly longer than either the anxiolytic or the white noise. People kept their hands in the water for much longer, sometimes up to 3 times as long when they were listening to their preferred music. You can see that the males were keeping their hands in the water for significantly longer than the females, but it was a female experimenter. The key point here is that in both the males and the females and when you collapse the groups together there is a significant effect for preferred music on tolerance times. So people were keeping their hands in the water for longer, they are feeling less pain. Once again the preferred bars there are significantly lower than the other 2 graphs as well. So participants were keeping their hands in the water for longer, feeling less pain and also feeling more control over their environment as well.

So, it is also interesting that in both this study and in the 2 hospital studies and subsequent work that we were carrying out, there was no common structuring features of the music that predicted anxiolytic effect. It wasn't that the participants were all or in general picking music that was happy in terms of up tempo, in a major key or in a minor key. There is nothing structural about the music that is producing that anxiolytic effect. That is quite controversial because much of what you read about the anxiolytic effects of music relates to structural features of music. Our suggestion is that it is to do with a personal relationship with the music and that is what is producing the effect. In general we put the types of music into loose categories, by far the most common category is popular music, we had examples of The Beautiful South, The Beatles, Eminem and we even had The Prodigy and 'Firestarter' a very aggressive piece of music. I know when Laura gives presentations just on this work she sometimes starts her presentation with 'Firestarter' blasting out in the room and then invites people to answer if they think this could possibly reduce their level of anxiety. But then she gives an explanation and goes into this notion of your personal relationship with music being crucially important. That is currently where we are, we will go back into the clinical environment now to see if we can unpick and understand in a bit more detail what is happening in this context.

5 Music and the brain

I'm going to finish now with a quick summary. Everything I've spoken about up to this point comes from my own personal experience, my own research, my own research, my own working with music. This is a very quick summary of some of the key issues. Often when I'm discussing this where people want to know a little bit about the neurology behind musical perceptions and musical performance. In particular people are interested in the left brain vs the right brain i.e. What parts of the brain are involved in musical perception and I remember when I visited the brain imaging centre in the University of Texas in San Antonio, they specialise in looking

at the effects of music. The director Robert Fox showed me a PET scan machine where people went into the pet scan machine and then from the roof a keyboard would drop down and the experiment was to play a C major scale, ‘here is some music would you read some music would you improvise, would you listen to some music?’. They were making comparisons between peoples brains when they were doing different types of musical activity. Robert Fox’s quote is ‘The whole brain lights up like a Christmas tree’. The limbic system involved in emotion, the motor cortex, the auditory cortex and all the different associative areas in the brain. It is no longer thought of as just one particular part of the brain that is involved in musical process. My conclusion is that as music is so enmeshed in so many different parts of our life and playing music and listening to music involves so many different parts of the body that the brain is wholly engaged in processing music. But we can still draw some conclusions. It is perhaps the effect that has been talked about most in the press and in the media for those of you who don’t know, in the mid 90’s Frances Rauscher published an article on nature showing that when you listen to a particular piece of Mozart music people scores on an IQ test were increasing.

In fairness to Frances Rauscher’s research, her work got blown out of proportion and people high jacked her ideas, but the extrapolations were enormous. We had all sorts of postulations about classical music having a fantastic wonderful effect upon our brain and even to the extent that in a county in Georgia the governor decreed that every mother, when they left the maternity ward, was to be given a copy of this particular piece of Mozart and instructed to play this piece of music to their child as it would increase the intelligence of the child over their lifespan. There is a whole load of issues wrapped in this. Think about that in the context of this notion of preferred music. I’ve tried using the Mozart effect with some of the students or into schools and I’ve seen kids put their fingers on their ears when the music comes on, its as if you are giving them some medicine and saying this is going to make you more intelligent. Once again I’m not using this as a way of bashing classical music, I’m just using it as an example of the way in which sometimes research findings can get exaggerated or blown out of proportion.

The brain that makes music is changed by it, there seems to be now very compelling evidence that playing music and listening to music neurologically changes your brain. “The cognitive neuro-science of music” is a textbook by which covers all aspects of the cognitive neuroscience of music and one of the conclusions in the book is that yes we have quite convincing medical evidence that being involved in musical participation changes the neurological connections in your brain. From this early work there is now an approach to music therapy called neurologic music therapy. Findings suggest that music can stimulate complex cognitive affective and motor processes in the brain which can then be generalised and transferred to non musical therapeutic purposes. This comes from Michael Thault, he is writing in a musical communication. Michael Thault’s laboratory looks at the effects of music on rehabilitation, he works with patients who have had strokes or patients with Alzheimer’s disease and particularly the stroke patients one of the key issues here is rehabilitation. Some people can’t walk after their stroke and in Michael Thault’s laboratory, the floor is wired to measured gait and he has all these fancy cameras and electronic devices. He can measure how well people are walking and how quickly they are recovering. He has got very convincing evidence that when you use music when trying to help people to walk and you combine the rehabilitation process with

music. You get them to walk in time to the music and have a music therapist working with the occupational therapist, people recover more quickly when music is used and its not just observational research, you can measure how quickly peoples gait recovers and how quickly they start to walk again. He has very definite evidence that music plays a crucial role in that. What is so great about Michael Thault's work is that that he has these brain scan machines measuring the way in which peoples brains respond to rhythm. He has been able to pinpoint certain parts of the brain that are involved in rhythmic processing and he believes, and I'm not an expert, but Michael has written quite extensively on this, that there is something to do with the natural rhythm in music and the way it resonates with the natural rhythms in our body and different parts of the brain that are involved in processing it. While on the one hand I'm slightly sceptical of the way in which neurological research has been applied, in the right setting and in the right context there are significant advances being made when it comes to neurologic music therapy.

6. Summary

I have looked at musical identities; I have given a broad overview of some issues relating to musical identities and musical communication. I talked about music in special education and needs. I gave an overview of a schools project in musical education and talked a little bit about music in pain perception and then a very brief overview on music in the brain.

Music is not a magic bullet for the ultimate (inaudible). I am not trying to suggest that just by playing music we change our lives or just by listening to music its going to help. It needs to be utilised in a knowledgeable way and when its done it can have very significant effects. I'm hoping that the work I have shown that music does have and can have very significant effects. However, Western society does construct an elitist image of musicians and this has implications for us all, for all of us who feel 'I am not musical I am not able to play music' or for people we are working with, there are very significant implications of the way in which society constructs this notion of musician. Finally if you are interested in the Gartnaval project, we are just finishing off a radio programme for the BBC, somewhat grandiosely titled 'Music is the healing (inaudible). But the project that the programme is looking at in music therapy it contains some contributors from America talking about the effects of music and it gives some more musical examples of the Gartnaval project and the way in which the Gartnaval project is using not only patients in the hospital but the wider community. Bringing in professional musicians to come in and work with the patients. Thanks very much for listening, I hope you have a broad view of some of the issues are involved and I hope it had resonated with some of your own experiences. Thanks very much.

Some Key References

Carlton, L. & MacDonald, R.A.R. (2004). An investigation of the effects of music on thematic apperception test (TAT) interpretations *Musicae Scientiae* 7 (special issue) 9-31

Hodges, D. A. (Eds.) (1996) *Handbook of Music Psychology*, San Antonio; IMR Press

- Horde P (Ed.) (2001) *Music as Medicine*, Ashgate Publishing Limited
- Juslin P.N. and Sloboda, J.A. (Eds.) (2001) *Music and Emotion*, Oxford: Oxford University Press.
- MacDonald, R.A.R., Byrne, C. & Carlton, L. (2006). Creativity and Flow in Musical Composition: An Empirical Investigation. *The Psychology of Music*, 34(3), 292-307
- MacDonald R.A.R & Wilson, G.B. (2006). Constructions of jazz: how jazz musicians present their collaborative musical practice *Musicae Scientiae* vol 10(1) 59-85
- MacDonald R.A.R & Wilson, G.B. (2005). The musical identities of professional jazz musicians: A focus group investigation. *The Psychology of Music*, 33(4), 395-419
- MacDonald R.A.R, Hargreaves D.J., & Miell D (2004) The sounds of ideologies clashing. *Action, Criticism & Theory for Music Education*, 3(1), 3-9
<http://www.siue.edu/MUSIC/ACTPAPERS/v3/EditorResponse04.pdf>
- MacDonald R.A.R., Mitchell, L., Dillon, T., Serpell, M.G., Davies, J.B., & Ashley, E.A. (2003). An Empirical Investigation of the Anxiolytic and Pain Reducing Effects of Music. *Psychology of Music* 31(2), 187 – 203.
- MacDonald, R. A. R. & Byrne, C. (2002). Teaching Strategies in the Music Classroom: The Impact of Information and Communication Technologies. *Music Education International*, 1, 44-56.
- MacDonald R.A.R., Miell, D. & Mitchell, L (2002) An investigation of children's musical collaborations: the effect of friendship and age. *Psychology of Music* 30, 148 –163.
- MacDonald, R.A.R. & Miell, D. (2002). Social processes in musical communication: a study of children's collaborative compositions. *European Journal for Semiotic Studies*, vol 14(2), 321-339
- MacDonald, R.A.R , Miell, D. & Morgan, L. (2000). Social processes and creative collaboration in children. *European Journal of the Psychology of Education*, 15(4), 405-416.
- MacDonald R.A.R & Miell D (2000). Creativity and Music Education: The Impact of Social Variables (2000) *International Journal of Music Education* 36, 58-68.
- MacDonald, R.A.R., J.B., Davies, & O'Donnell, P.J. (1999). Structured music workshops for individuals with learning difficulty: an empirical investigation. *Journal of Applied Research in Intellectual Disabilities* 12(3) 225 - 241.
- Miell, D. MacDonald R.A.R, & Hargreaves D.J. EDS (2005). *Musical Communication* Oxford: Oxford University Press.

MacDonald, R.A.R, Mitchell, L.A., Dillon, T., Serpell, M.G., Davies, J.B. and Ashley, E.A. (2003). An empirical investigation of the anxiolytic and pain reducing effects of music. *Psychology of Music*, 31(2), 187-203.

Mitchel, L. MacDonald, R.A.R. & Brodie, E. (2004) Temperature and the cold pressor test. *Journal of Pain*, 5(4), 233-238

Mitchel, L. MacDonald, R.A.R. & Brodie, E. (2006). A comparison of the effects of preferred music, arithmetic and humour on cold pressor pain. *European Journal of Pain* 10, 343-351

North A.C. & Hargreaves D.J. (1997) Experimental aesthetics and everyday music listening. In D.J. Hargreaves and A.C. North Eds. (pp. 84 – 107) *The Social Psychology of Music*. London: Oxford University Press

O'Donnell, P.J., MacDonald, R.A.R. & Davies J.B. (1999). Video analysis of the effects of structured music workshops for individuals with learning difficulties, In D Erdonmez & R.R. Pratt, (Eds.) *Music Therapy & Music Medicine: Expanding Horizons* (pp. 219-228). Saint Louis: MMB Music.

Pavlicevic, M. & Ansdell, G. (2004) *Community Music Therapy*. London: Jessica Kingsely

Peretz, I. (2003) *The Cognitive Neuroscience of Music*, Oxford: Oxford University Press

Pothoulaki, M., MacDonald, R.A.R., and Flowers, P. (2005) Music Interventions in Oncology Settings: A systematic literature review" *British Journal of Music Therapy* 19(2) 75-84.

Sloboda, J (2004) *Exploring the musical mind*, Oxford: Oxford University Press

Sloboda, J.A. (1985) *The Musical Mind*. Oxford: Oxford University Press.

Wilson, G.B., & MacDonald R.A.R. (2005). The meaning of the blues: Musical identities in talk about jazz. *Qualitative Research in Psychology*, 2, 341-363.

Zillman, D. & Gan, S. (1997) Musical taste in adolescence. In D.J. Hargreaves and A.C. North Eds. (pp. 161-188) *The Social Psychology of Music*. London: Oxford University Press.

For further references related to this lecture and to hear a radio programme describing some of this work please go to

<http://www.gcal.ac.uk/sls/Psychology/staff/macdonald/index.html>

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