chapters become second nature. However, each new client is an individual, with individual needs. Experience and competency does not defend a therapist from feelings of resistance, negativity, bias, over-supportiveness and even inadequacy. These relate to personal characteristics, past history and current events in the life of the therapist, and will affect the nature of improvisation in the therapeutic process. The consequences are to some extent inevitable, and the most appropriate and 'professional' way to manage such powerful and influential experiences is to maintain awareness, understanding and insight into their emergence, presence and value.

CHAPTER 9

# Two Different Methods for Analyzing and Reporting Improvised Music

## Introduction

This last chapter is concerned with how we can analyse musical material, whether from pre-composed music or a piece of improvisation. The methods and techniques I have described in the last eight chapters give some clear frameworks, and make it easier to identify existing structure, style, dynamic and meaning in the musical material. However, improvised music is frequently the result of spontaneous, unplanned music making, and therefore the product is, by nature, unpredictable. I think that one can approach the analysis of improvised music, and indeed all other forms of music by asking two essential questions:

- How can I describe this music?

- What is the function of this music?

This may sound reductionist, yet these two questions actually encapsulate many other questions that need to be addressed. Making a good enough description of the musical material (question 1) means considering all the parameters and elements of music, as well as the style of performance, and the moods and associations the music might provoke. Exploring the function of the music leads into a far more complex process applied in music therapy in order to analyse the musical material in relation to a number of therapeutic parameters or expectations. Here the structure, style, engagement and interaction that goes on in shared music making between therapists

and clients, or by a client on his/her own, are the focus of the analysis, drawing out implications and conclusions about issues relating to therapy process.

The first question can be answered by using an adequate and inclusive model of musical analysis in order to make a comprehensive and adequate description. The purpose of this is to do no more nor less than to give an overall verbal description of a piece of music that is specific enough for someone to be able to understand what that music sounds like.

## 9.1 Analysis of music for a musical purpose

A good model for music analysis has been developed by Dr Denise Erdonmez Grocke during her doctoral research into Guided Imagery and Music (GIM). I was involved in the later stages of this research, during which she developed a model of musical analysis in order to seek information about the structure of the music in a music programme immediately prior to a 'pivotal moment' in the therapeutic process. Erdonmez Grocke was particularly interested to explore common aspects that could be seen in music that underpinned these pivotal moments described by subjects in her research, and so needed a comprehensive music analysis tool to find similarities and dissimilarities in four pieces of music (Erdonmez Grocke 1999). Drawing on the list of relevant musical elements formulated but not published by Bonny (the founder of GIM) Erdonmez Grocke then developed a much expanded and more comprehensive music analysis tool, consisting of twelve categories of musical elements, and a further three categories concerned with mood, symbolic and associational meaning and performance. In total, there was a list of 63 sub-components under these 15 headings.

Verification indicated that the tool Erdonmez Grocke developed was inclusive and detailed enough to satisfy content validity, as well as being criterion-related and with construct validity. In addition, part of the process of this research involved validating this tool, by determining which of the 15 categories and 63 components were difficult to assess, or were too general to be precise. For example, elements such as whether the structure of the music was predominantly simple or complex, whether intervals were conventional or unconventional, the pitch range of the instruments and the level of resonance in the timbre were difficult to evaluate, and were excluded from the final analysis tool. Moreover, in the process of analysing and verifying using this tool, we found additional elements that needed to be included. Table 9.1 is the revised Structural Model for Musical Analysis that was developed out of this research.

**Table 9.1 A Structural Model for Music Analysis (SMMA) (Erdonmez Grocke 1999)**

### 1. Style and Form
1.1. Period of composition: e.g. baroque, classical, romantic; impressionist; 20th century (from 1910– )
1.2 Form: e.g. sonata form; ABA; theme and variations; rhapsodic form; fugue; tone poem
*1.3 Structure: predominantly simple or complex*

### 2. Texture
2.1 Consistently thick/thin or variable
2.2. Monophonic; homophonic; polyphonic

### 3. Time
3.1 Meter: 2/4 or 4/4; 3/4 or 5/4, etc.
3.2 Complexity and variability in meter.
3.3 Silences; rests; pauses

### 4. Rhythmic features
4.1 Underlying pulse of the work – consistent/inconsistent
4.2 Important rhythmic motifs
4.3 Repetition in rhythmic motifs
4.4. Variability in rhythm – predictable/unpredictable
4.5 Syncopation

### 5. Tempo
5.1 Fast; slow; moderato; allegro, etc.
5.2 Alterations in tempi: change of meter; use of accelerandi and ritardandi

### 6. Tonal features
6.1 Key in which the work is written
6.2 Key structure; diatonic; modal.
6.3 Major/minor alternations
6.4 Chromaticism
6.5 Modulation points

### 7. Melody

7.1 The main themes in the selection (1st theme, 2nd theme with development or variations)

7.2 Significant melodic fragments

7.3 The structure of the melody: propinquity; step-wise progressions; large intervalic leaps

7.4 Significant intervals (e.g., fall of an octave in a melody). *Intervals: conventional or unconventional*

7.5 Shape – rounded, ascending, descending

7.6 Length of phrases: symmetrical, short, long

7.7 *Pitch range of instruments*

### 8. Embellishments, ornamentation and articulation

8.1 Embellishments to the melodic line

8.2 Trills; appoggiaturas

8.3 Accentuation: marcato; accents; detached bowing

8.4 Pizzicato/legato

8.6 Use of mute

### 9. Harmony

9.1 Predominantly consonant, or dissonant

9.2 Consonance/dissonance alternation within the selection

9.3 Significant harmonic progressions

9.4 Rich harmonies

9.5 Predictable harmonies (e.g. I; IV; V progression)

9.6 Unpredictable harmonies

9.7 Cadence points – perfect; imperfect; interrupted

### 10. Timbre and quality of instrumentation

10.1 Solo instrument: instrumental; vocal

10.2 Accompaniment to solo instrument/voice: orchestral; choral; other instrument

10.3 Small group – e.g. quartet, combinations of instruments

10.4 Instrument groups used in orchestration (strings, woodwinds, brass, percussion, harp) creating timbral colour

10.5 Interplay between instruments and instrument groups

10.6 Layering effects (adding and reducing instrument parts)

### 11. Volume

11.1 Predominantly loud or soft – alternations between/gradation between

11.2 Special effects of volume: pianissimo; fortissimo; Sforzandi

### 12. Intensity

12.1 Tension/release

12.2 Crescendi, building to peak, and resolution

12.3 Tension in harmony, texture, etc., and resolution

12.4 Delayed resolution or absent resolution

12.5 Ambiguity resolved or unresolved

### 13. Mood

13.1 Predominant mood, as depicted by melody, harmony and predominant instrument

13.2 Feelings and emotions represented.

### 14. Symbolic/associational

14.1 Culturally specific associations – e.g. Vaughan-Williams' English idioms

14.2 Metaphoric associations

### 15. Performance

15.1 Quality of performance (including technique of the performers)

15.2 Stylistic interpretation – artistic merit

15.3 Articulation of feeling and emotion

It is worth remembering that this tool was developed to analyse the music used in GIM – which is predominantly classical and orchestral. Consequently, the music is often very complex, for example in some of the late romantic works used in the GIM programmes. Therefore making analysis of the 'pitch range of instruments' would be rather futile. However, in more simple forms of improvisational music, the elements that were excluded from the SMMA for the doctoral study because of the complexity of the music could easily be relevant for analysing improvised music. For example, examining an improvisation and determining whether it has a predominantly simple structure, conventional or unconventional intervals, and the pitch range of the instruments used might be very relevant information. So I have re-included these aspects (*in italics*) in the above table for optional use. Nevertheless, as it stands it

contains enough elements in the form of a 'checklist' to undertake an analysis of a piece of improvisation that is primarily concerned with describing the music.

The last three sections (13,14 and 15) are likely to elicit quite subjective impressions. Performance as a category may also seem inappropriate for a structural analysis of improvised music. However there is an element of 'performance' in the way some clients make music, so it may be relevant to offer a comment on that. Erdonmez Grocke herself says that the integrity, authenticity and excellence of performance is, in any event, a subjective measurement, and relates to how convincing the performance was to the listener. These items were excluded from the final revised version. Aspects concerned with quality, stylistic interpretation and the articulation of feelings and emotions in the way the client 'performs' music were retained – which could have their own relevance for commenting on improvised music.

The important thing to realize about this analysis tool is that it is a set of criteria, some or all of which can be used to describe adequately a part or whole of an improvisation. It is not a standardized precision tool that comes with a procedure or set of instructions attached that must be followed, and Erdonmez Grocke has not given guidelines she expects users to follow. Rather it functions as a frame by which to determine the presence and quality of musical and some non-musical parameters in order to give a comprehensive and adequate description and to answer the first question in analysing music.

To end this section, I will provide an example of how this tool works in practice drawn from Erdonmez Grocke's doctoral thesis on a piece of pre-composed music, in this case the slow second movement of Beethoven's Violin Concerto where, following the SMMA by Erdonmez Grocke, and the verification by myself, Erdonmez Grocke gives a final, condensed, phenomenological description:

> The music is written for solo violin with orchestra, and is in a major key. Its structure is simple, comprising two themes with variations. There is a dialogue between the violin and the orchestra, and between the violin, and clarinet, bassoon and horn. The solo violin part often transcends the orchestra, with embellishments in the high register. The mood is quiet and peaceful, but also expansive. The harmonic structure of the work is consonant, and the melodic line and harmonic sequences are predictable. There are no unexpected progressions, and the accompaniment is supportive throughout. The strings provide a section of pizzicato in the accompaniment which contrasts with the legato line of the solo violin. The violin solo drifts away at the end. (Erdonmez Grocke 1999, p.213)

For a further example of the importance of musical analysis for a muscial purpose, from earlier research I have conducted into the relaxing and therapeutic effects of

low frequency sound and sedative music (Wigram 1996c; Wigram and Dileo 1997), I would like to add one further dimension and tool. In order to select and describe music that can be generally described as relaxing or stimulating, I have formulated criteria for the elements one typically finds in stimulatory and sedative music, and have based the conceptual framework for this on the potential predictability and stability of the music. The table that follows (Table 9.2) is an attempt to define the characteristics of music, and how it can be played. This can also act as a guide for improvising with the intention of promoting stimulation or relaxation.

### Table 9.2 Potentials in Stimulatory and Sedative Music (PSSM) (adapted from Wigram 2002b)

#### Potential elements in stimulating music

- Unpredictable changes in tempo
- Unpredictable or sudden changes in: volume, rhythm, timbre, pitch and harmony
- Wide variations in texture in the music
- Unexpected dissonance
- Unexpected accents
- Harsh timbres
- Lack of structure and form in the music
- Sudden accelerandos, ritardandos, crescendos and diminuendos
- Unexpected breaks in the music

#### Potential elements in sedative music

- Stable tempo
- Stability or only gradual changes in: volume, rhythm, timbre, pitch and harmony
- Consistent texture
- Predictable harmonic modulation
- Appropriate cadences
- Predictable melodic lines
- Repetition of material
- Structure and form

- Gentle timbres
- Few accents

Compared to Erdonmez Grocke's more comprehensive SMMA this is a more specific choice of certain parameters to answer a narrower question. The question here is not how can one describe the music, but is the music stimulatory or sedative in style?

The SMMA and the PSSM are tools for analysing music, but they also provide a frame for the creation of music. In developing musical skills to use in clinical improvisation, music therapy students and qualified practitioners learn how the balanced and effective use of these elements can be made in a very sensitive and subtle way to engage and help patients. Some clients *need* the stability and safety of predictable music, for example, people with psychotic disturbance, whose world is chaotic and disconnected. Others, for example patients with autism, learning disability, or anxiety neuroses, *need* to develop abilities to cope with an unpredictable world, and this can begin in developing adaptability to unpredictable musical experiences. So the elements of music that can determine the effect in receptive music therapy also play an important role in active music making with clients.

## 9.2 Analysis of music for a therapeutic purpose

Returning now to the second of the two questions I posed above, when presenting the results of a music therapy assessment, or a period of music therapy, the documentation of musical material, and the analysis of the musical experience that has been present during the session(s) with clients has specific connections to therapeutic issues. Therefore the analysis involves examining the 'function' of the music in order to establish connections to pathological problems and therapeutic process. From the literature, and in examining current clinical practice, we can see that very few 'general' models, let alone 'standardized' models, of assessment have been developed. In music therapy, scales (tools) for assessment and evaluation developed to date have focused on a variety of aspects of the music therapy process, including purely musical analysis as described above (Erdonmez Grocke 1999; Wigram 2002b); musical interaction and dynamics (Pavlicevic 1995; Skewes 2001); response, relationship and musical communicativeness (Nordoff and Robbins 1977); diagnosis (Raijmaekers 1993; Wigram 2002a); psychological function (Sikström and Skille 1995); cognitive, perceptual, motor and visual skills (Grant 1995); sound-musical profiles (Di Franco 1999); and the analysis of improvised music (Bruscia 1987) to name but a few.

While these scales or criteria for assessment typically rely on subjective opinion and, to my knowledge trials involving observer reliability or verification have not taken place, they are often detailed, well thought out and with appropriate clinical applicability for a specific population. However, apart from the Nordoff-Robbins Scales, there is no systematic and widespread use of any one of these models, which is a shame considering the extent and detail of some of the parameters that can be used. Typically, therapists will collect one or more of the types of data in Table 9.3 in order to make their evaluation in any one of these models of assessment. The term behaviour is used here as a descriptor of all types of behaviour: physiological, emotional, cognitive, unconscious, etc., and includes an understanding of human behaviour from psychotherapeutic, medical and behavioural traditions.

### Table 9.3 Data gathering in assessment and evaluation

| | |
|---|---|
| Musical data | (examples of musical events/musical characteristics) |
| Musical behavioural data | (examples of client's behaviour without musical description) |
| Behavioural data | (characteristics of general behaviour in music therapy) |
| Interpretative data | (interpretation of client's musical and general behaviour supported or not supported by musical or behavioural data) |
| Comparative data | (comparison of client's behaviour in music therapy with behaviour in other situations) |

One assessment procedure that focuses specifically on musical elements as the basis for analysing change or lack of change in clients is the Improvisation Assessment Profiles (IAPs), (Bruscia 1987), and this is the tool I think is the most comprehensive and relevant way to explain the function of the music. Despite the fact that IAPs have been in the literature for some years there is quite a limited use of this assessment method currently, perhaps because it is a complex, detailed and extensive method of analysis.

In the complete set of IAPs, Bruscia has defined six specific areas of potential analysis: autonomy, variability, integration, salience, tension and congruence. Each profile provides criteria for analysing improvisation, and the criteria for all the profiles form a 'continuum of five gradients or levels, ranging from one extreme or polarity to its opposite' (Bruscia 1987, p.406).

To use these profiles in an economic and effective way to analyse musical material, it is necessary to follow the recommendations and guidelines that Bruscia offers for using IAPs. Part of this process involves reducing the amount of material to

**Table 9.4 IAP autonomy profile**

1 = Dependent
2 = Follower
3 = Partner
4 = Leader
5 = Resister

- Rhythmic ground
- Rhythmic figure

- Tonal and melodic
- Harmonic

- Texture

- Phrasing

- Volume
- Timbre

- Programme/lyrics

**Table 9.5 IAP variability profile**

1 = Rigid
2 = Stable
3 = Variable
4 = Contrasting
5 = Random

- Tempo
- Meter/subdivisions
- Rhythmic figure

- Melodic figure
- Tonal ground
- Harmonic
- Style

- Texture: Overall
- Texture: Roles
- Texture: Register
- Texture: Configurations

- Phrasing
- Volume
- Timbre

- Body

- Lyrics

be analysed to that which is both pertinent and essential, and then choosing the appropriate profile(s) to apply. The practical application of IAPs has been developed for both quantitative and qualitative analysis. I want to explain the method by which I apply this comprehensive assessment tool, describing both the decisions I take, and the use of the parameters Bruscia has incorporated for analysis.

Of Bruscia's six areas for analysis, the two profiles that I use most frequently for the analysis of musical material with children who have communication disorder are autonomy and variability (Wigram 1999b,c, 2000a, 2001), and so I will use these two for the purposes of explaining the method I use in this analysis. For the original and comprehensive text on the Improvisation Assessment Profiles, see Bruscia 1987. The profiles and scales for autonomy and variability are described in Tables 9.4 and 9.5.

> 'The autonomy profile deals with the kinds of role relationships formed between the improvisers. The scales within the profile describe the extent to which each musical element and component is used to lead or follow the other' (Bruscia 1987, p.405).

> 'The variability profile deals with how sequential aspects of the music are organised and related. Scales within the profile describe the extent to which each musical element or component stays the same or changes' (Bruscia 1987, p.404).

In relation to clinical work, I have found these two profiles are useful in differentiating between children who have autism or some other variant of pervasive development disorder or communication disorder. Autonomy helps one look closely at the inter-personal events that are going on, particularly the readiness of a child to work

together with me, take turns, share and act as a partner, or the child's propensity for resisting suggestions or becoming extremely dependent and reliant. Variability can illustrate at an inter- and intra-musical level the child's capacity for creativity, or evidence of a child's rigid or repetitive way of playing that might support a diagnosis on the autistic continuum.

### Practical application

To use these profiles in an economic and effective way to analyse musical material, one needs first to study the recommendations and guidelines that Bruscia offers for using the IAPs. Essentially one has to follow a process of reducing the amount of material to be analysed to that which is both pertinent and essential, and then choosing the appropriate method within the IAPs to do it.

1. Consider whether one is focusing on intra-musical or inter-musical events, or both.

2. Choose the relevant profiles for analysis, related to either the focus of the therapy, or the questions raised for the assessment.

3. Review the entire session to be analysed, and select sections or improvisations from the session that contain some of the most relevant material that will reap pertinent and valuable information when analysed. (Bruscia 1987, pp.418–421)

I have added to this some criteria that helped me particularly in the process of diagnostic assessment, and also to continue to reduce the amount of analysis that is necessary to produce some relevant information through which one can interpret and evaluate what is happening musically.

1. Based on issues related to the referral or the child's behaviour, and having reviewed musical events and the musical behaviour of the child in this session, I choose the particular musical elements on the scale it is most relevant to use in the analysis. The scales are quite detailed and lengthy, and it may be beneficial to select out, for example, rhythm, volume and phrasing as three particular elements that will be fruitful for analysis.

2. I use an event-charting system, where, on looking at a video recording or listening to an audiotape, I search for musical events that can be categorized using the gradients of the profiles. I have generated a form for undertaking this analysis (Table 9.6).

Typically I will select two or three sections of the session for analysis, and then select the elements of the scale that I wish to focus on and write them in under each gradient of the two different profiles. Watching the sections I have chosen to analyse on video, often two to three times, I will score the number of events in the boxes where I can see, for example, variability in tempo. Bruscia provides a very rich resource in his descriptors of types of musical material that come under these gradients where he describes the five different levels of either variability or autonomy (Bruscia 1987, pp.430–431, 445–447).

### Using the improvisation assessment profiles for event-based analysis

Purpose: To identify events in musical improvisation using specific profiles and items from the musical scales.

*Procedure for analysis*:

Stage 1. Select a short section of improvisation for analysis.

Stage 2. Decide which profile(s) to use based on the focus of therapy/nature of client – therapist relationship or client's music.

Stage 3. Watch or listen to the extract from the improvisation again and decide which musical/other parameters will be monitored from the profile (maximum three).

Stage 4. Choose one parameter to begin with and watch the video again.

Stage 5. *Events*: Make a tick in the box *each time* an event occurs in the improvisation. Pause the tape while doing so, i.e. if the client changes tempo, and the therapist follows, and the client stays stable for a few seconds in the new tempo, make a tick under:
Autonomy:'Leader':Rhythmic ground *or* Variability: 'Variable or contrasting': Tempo

Stage 6. Where relevant (and interesting) notate any clear 'leitmotifs/themes' at the bottom for future reference in reports.

Stage 7. When you have finished this parameter, choose the second parameter and analyse the events again (stages 4–6).

Stage 8. Add up the events in each box, and put total scores onto the form.

Stage 9. Interpret the scores for this section of improvisation in relation to the aims of therapy, etc.

Stage 10. If another profile is to be applied, repeat process from stages 3–9.

## Table 9.6 Event Based Analysis (EBA) raw score sheet

Name........................................ Date........................

Profile:...............................

|  | Gradient 1 | Gradient 2 | Gradient 3 | Gradient 4 | Gradient 5 |
|---|---|---|---|---|---|
| **Musical parameter** |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Table 9.6 is the raw score sheet within which I place the gradients of the chosen profile, and the chosen musical parameters from Bruscia's scales. I record with a mark or a tick each time an event occurs. Depending on both the musical and the therapeutic situation, events can be identified by frequency alone, or by frequency and duration. In many cases, the complexity and multi-layered nature of the music in improvisations makes it quite difficult to identify the duration of an event. For example, you may note when a client (or therapist) has changed tempo, and whether the other follows – but how long that new tempo remains stable (duration of the event) can be difficult to see when other related or unrelated events are occurring simultaneously. Therefore, for some purposes it is enough to record a moment when an event starts. Following collection of the scores, the totals can then be transferred to another form where an overview of what is occurring can be seen. Table 9.7 gives an example from a client whose case has been previously reported in the *Nordisk Tidsskrift for Musikterapi 8* (Wigram 1999b) where the total scores can be seen.

## Table 9.7 Summary IAP for a 5-year-old boy with language delay (Bruscia 1987, adapted by Wigram, 1996)

Patient's name: Barry        Date: _____

Analysis:
Section 1: Piano+drums
Section 2: Piano+metallophone
Section 3: Piano duet

| Autonomy |  |  |  | Variability |  |  |  |
|---|---|---|---|---|---|---|---|
| **Dependant** | 1 | 2 | 3 | **Rigid** | 1 | 2 | 3 |
| Rhythmic ground | 2 | - | - | Tempo | - | - | - |
| Melody | 3 | - | - | Melody | - | - | - |
| Timbre | - | - | - | Timbre | - | - | - |
| **Follower** |  |  |  | **Stable** |  |  |  |
| Rhythmic ground | 12 | 3 | 2 | Tempo | 7 | 3 | 1 |
| Melody | 6 | - | - | Melody | 5 | 2 | - |
| Timbre | 2 | - | 1 | Timbre | 2 | 7 | - |
| **Partner** |  |  |  | **Variable** |  |  |  |
| Rhythmic ground | 3 | 2 | 2 | Tempo | 8 | 5 | 3 |
| Melody | 1 | 1 | 3 | Melody | 6 | 3 | 2 |
| Timbre | 1 | - | - | Timbre | 8 | 1 | 5 |
| **Leader** |  |  |  | **Contrasting** |  |  |  |
| Rhythmic ground | 4 | 7 | 3 | Tempo | 3 | 2 | 2 |
| Melody | 1 | 4 | - | Melody | 1 | 1 | 3 |
| Timbre | 1 | - | - | Timbre | 8 | 1 | 5 |
| **Resister** |  |  |  | **Random** |  |  |  |
| Rhythmic ground | - | - | 4 | Tempo | - | - | 1 |
| Melody | - | - | - | Melody | - | - | - |
| Timbre | - | - | 2 | Timbre | - | - | - |

**Table 9.8 Summary IAP for an 11-year-old boy with classical autism**

Patient's name: Daniel           Date: _____

Analysis:
Section 1: Opening+Drum
Section 2: Guitar, Piano, Cymbal
Section 3: Vocal/Mic.

| Autonomy | | | | Variability | | | |
|---|---|---|---|---|---|---|---|
| **Dependant** | 1 | 2 | 3 | **Rigid** | 1 | 2 | 3 |
| Rhythmic ground | - | - | - | Tempo | 12 | 7 | - |
| Rhythmic figure | - | - | - | Rhythmic figure | 8 | 3 | - |
| Timbre | - | - | - | Timbre | 3 | - | - |
| **Follower** | | | | **Stable** | | | |
| Rhythmic ground | 3 | - | - | Tempo | - | - | 2 |
| Rhythmic figure | - | - | - | Rhythmic figure | - | - | 3 |
| Timbre | - | - | - | Timbre | - | - | 2 |
| **Partner** | | | | **Variable** | | | |
| Rhythmic ground | 2 | 3 | 5 | Tempo | 2 | - | - |
| Rhythmic figure | 1 | - | - | Rhythmic figure | 1 | - | - |
| Timbre | - | - | - | Timbre | - | 3 | - |
| **Leader** | | | | **Contrasting** | | | |
| Rhythmic ground | 2 | 1 | 1 | Tempo | - | - | - |
| Rhythmic figure | 1 | - | - | Rhythmic figure | - | - | - |
| Timbre | - | - | - | Timbre | - | - | - |
| **Resister** | | | | **Random** | | | |
| Rhythmic ground | 9 | 4 | 1 | Tempo | - | - | - |
| Rhythmic figure | 7 | 3 | 1 | Rhythmic figure | - | - | - |
| Timbre | 10 | 7 | 2 | Timbre | 2 | - | - |

The data in Table 9.7 provided evidence of musical interaction, some emerging musical independence in the scores in musical leadership and a lack of rigidity. Therefore this analysis supported a diagnosis of significant language delay rather than autism. The events in Table 9.8 give a very different picture, and reveal a significant number of events of musical behaviour that underpin a diagnosis of autism, particularly the rigidity of the playing and the inability to engage in sharing and turn-taking in the playing, as evidenced by the number of events recorded under the category of resister. This example is taken from a previous article in *Music Therapy Perspectives* (Wigram 2000a)

## 9.3 Statistical analysis issues using the Improvisation Assessment Profiles

Finally, I would like to reflect on the potential for analysing numerical or categorical data from a functional analysis of musical improvisation. The functional, quantitative use I have made of the IAPs so far has involved scoring (counting) events in musical improvisation and assigning scores to predetermined categories (Wigram 1999b, 1999c, 2000a). For example, having decided that I want to look specifically at changes in tempo as a musical indicator related to autonomy, I have counted the number of times one or other person in a client – therapist improvisation changed tempo, and what provoked it. It is relatively easy to make a 'judgment' about the initiative that was taken to change tempo – whether it was independent or dependent on another, and to identify the event as standing somewhere on the gradients of the autonomy profile. This event, together with others within the same category (tempo, rhythmic ground) provides data that can be initially used for *descriptive statistics*. Descriptive statistics are essentially different from *inferential statistics*, and set out to summarize the experience. The difference can also be noted in drawing a distinction between samples and populations (Robson 1985; Rowntree 1991; West 1992). This is not so clear at first in Wheeler (1995), where Decuir initially suggests the use of descriptive statistics to identify parameters of a population or a sample. Inferential statistics, as Decuir later states clearly, allow the researcher to '…go beyond description to infer or estimate certain population characteristics based on a sample of the population.' Now the type of descriptive statistics that can be employed to quantify data analysis from the IAP's are clearly *measures of central tendency* (mean, mode, median and standard deviation), and to a lesser degree *correlation coefficients*.

*Frequency data*, such as numbers of events (as described above), is ripe for analysis through descriptive statistics, and appropriate conclusions can be drawn from such analysis in single cases. Neither the gradients in the IAPs, nor the scales can be

scored using a *ratio* or *interval* scale, and therefore *parametric statistics* cannot be undertaken on a set of data if one is computing on the basis of equidistant points on a scale. However, *non-parametric* tests can be used. The value of non-parametric statistics is that rather than calculating the exact numerical difference between scores, and basing the statistical computation on this, non-parametric tests only take into account whether certain scores are higher or lower than other scores, effectively rank ordering the scores, as can be see in a Wilcoxon Signed-Ranks Test, Mann-Whitney U, a Friedman or a Kruskal-Wallis (Parametric equivalents: related t-test, unrelated t-test, 1-way ANOVA related or 1-way ANOVA unrelated respectively). Less robust, but applicable statistical tests are thus available should analysis comparing the number of scored events on an *ordinal* scale seem appropriate through rank ordering, and where the data is clearly not homogenous (Greene and D'Olivera 1989).

For a different type of analysis, categories can be developed and statistical tests applied (*chi-square*). The gradients on the IAPs could be treated as categories, and the assignment of musical elements defined as a whole series of sub-categories, i.e. *rhythmic ground follower, rhythmic ground leader, contrasting phrasing, rigid phrasing*. The normal use of the chi-square is where the data is *nominal* and the subjects are assigned to one or more categories. In the case of the IAPs the musical events could be assigned to categories, as in the example above. One is therefore attempting to find out whether there is some significant difference between categories. A chi-square can compute a comparison of the observed frequencies by which a number of events will fall into different categories (cells) with the expected frequencies for each 'category' if the differences are due to chance, as stated by the null hypothesis. It is important to note that a minimum number of at least twenty events (or subjects) is required to have enough allocated to each category (cell). The gradients on the IAPs are *ordinal* data, but can also be described as categories of description, response or interaction and therefore could lend themselves well to this type of statistical analysis.

IAPs are a highly sophisticated descriptive tool for undertaking qualitative analysis. Bruscia (1987) stated that they were used extensively as a teaching tool (p.410), and I would like to reinforce this aspect, because they are so useful in getting students to listen to what is happening, and then analyse it at a musical level, before jumping to conclusions in psychological, intuitive, but sometimes impetuous interpretation. Bruscia emphasizes the importance of listening to, and hearing what is happening in the improvised music, as he recommends the starting point for using the IAPs is with the salience profile. This profile helps identify which musical elements are most prominent, and exert most influence over other elements, and can be used to analyse intra-musical and inter-musical events. I think that when you

know what you want to look for, you don't necessarily have to start with establishing the salience of musical elements – but if you are starting with a more 'open listening' approach, then the salience profile is the right starting point. There is, in my opinion, clearly a place for many different applications, methods of analysis and methods of interpretations using this IAP frame, and what is more important is that this model should be developed for a more systematic and widespread use internationally.

### Conclusion

Musically structured or free improvisation provides a complex source of data for analysis, and the applied use of the Improvisation Assessment Profiles is effective in identifying music events that relate to therapeutic issues, as well as analysing creativity and musical interaction. Depending on the client(s), the analysis of musical material can provide concrete evidence in the form of the events that take place on specific musical elements to identify important aspects relating to the direction, process and outcome of therapy. It is necessary to make such an analysis in order to support and validate an intuitive understanding of a client's musical ability or creativity, without some of the significant and concrete events.

### 9.4 General conclusion

Improvisation gives us a very rich source of material for analysis. It seems unlikely that one would apply both the models of analysis described above to a given situation, yet it does depend on the question to be addressed: description or function of the music. The recommendations for the potential levels of analysis using the IAPs suggest they will answer both questions. However, the SMMA is a short, effective and inclusive way of describing all almost aspects of the music, without going on to undertake further, more detailed analysis.

This brings me to the end of this book, closing a process that started, almost at a minimalist level, in Chapter 3 with a one-note improvisation here in Chapter 9 with a discussion about the complex analysis of multiple musical elements in improvisation. If this book can do one thing, I hope it leads people (musicians, therapists and clients) towards the sheer pleasure and enjoyment of improvising. Because it is a pleasure – and when I am teaching it, I spend more time trying to get students to relax, and listen with attention, heightened perception and expectation to the sounds they are making, and to love and nurture those sounds. We spend more of our lives being dissatisfied with what we do than satisfied. There is a valuable but sometimes destructive tendency to self-critique in humans that, when seen at its worst, results in the search for criticism even in the face of creativity, discovery and

joy. To be able to feel proud and joyful when improvising, we must accept and perhaps ignore imperfection. Musicians who find improvisation most challenging are sometimes experienced and classically trained musicians, and it is perhaps because they are imprisoned by aspiring to the perfection of their 'ideal' musical selves – often driven by the influence of composers and performers significant to them. Break out of prison! Find your own music, create, explore, enjoy!

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