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Sounds of intent, phase 2: gauging the music development of children with complex needs

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This article reports the latest phase of research in the *Sounds of intent* project, which is seeking, as a long-term goal, to map musical development in children and young people with severe, or profound and multiple learning difficulties (SLD or PMLD). Previous exploratory work had resulted in a framework of six putative music-developmental stages set across three domains of musical engagement: reactivity, proactivity and interactivity. This was intended as a first step in enabling teachers and therapists to gauge their pupils' levels of musical development. The research described in this paper indicates that a moderately fine-grained observation schedule (involving three sub-levels per *Sounds of intent* developmental stage) may be sufficient to show longitudinal change in the observed musical engagement of pupils with PMLD, three groups of whom participated in a specially designed programme of musical activities over a six-month period. However, mapping the individual's levels of attainment onto their chronological ages indicates that, generally speaking, musical progress is likely to be made in tiny increments – notionally equivalent to around one *Sounds of intent* level during a child's entire time in compulsory education (4–16 in the UK). This suggests that an even finer-grained observation scheme may be of value to practitioners seeking to chart change in the longer term. It is proposed that this should be the subject of further research, and should comprise two components: *level* and *frequency* of engagement.

Keywords: severe learning difficulties (SLD); profound and multiple learning difficulties (PMLD); development; music; zygonic

Introduction

A little over a decade ago, the first author produced a position paper concerning the music education of children and young people with severe, or profound and multiple learning difficulties – in particular, looking at issues in UK provision that were current at the time, setting out a new conceptual framework for teachers practising in this area, and presenting proposals for research (Ockelford 2000). A number of initiatives followed, including a survey of the music offered in special schools in England (subsequently known as the 'PROMISE' report – see Welch, Ockelford and Zimmermann 2001; Ockelford, Welch and Zimmermann 2002); a doctoral study by Kyproulla Markou at Roehampton University that examines the relationship between music education and music therapy for pupils with learning difficulties (see Ockelford 2008:

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37–45); and the establishment of the *Sounds of intent* project, whose aim was to map the musical development of young people with complex needs[1] (see, for example, Ockelford et al. 2005; Welch et al. 2009; Cheng, Ockelford and Welch 2010; Ockelford and Matawa 2010). Once this mapping was complete, the intention was to produce an interactive web-based version of the resulting developmental framework, which would enable practitioners and parents to:

(a) gauge their children's levels of musical attainment,
(b) chart the changes that may occur over time and in response to particular interventions, and
(c) record qualitative observations in the form of verbal, video or audio data to build up a profile of a child's experiences and achievements over time.

From the outset, the *Sounds of intent* research team adopted a 'bottom up' approach, which involved working with a group of practitioners who were active in the field – music therapists, teachers and others – with a view to developing accurate descriptions and shared interpretations of the different forms and levels of musical engagement that they observed among pupils with severe or profound learning difficulties. Members of the group held half-day meetings once or twice a term over a two-year period to analyse in detail video recordings of musical behaviours that were deemed to be 'typical', 'exceptional' or of particular interest. The children's responses, actions and interactions were carefully noted and encapsulated in short descriptions such as those shown in Table 1.

In the light of these and many similar examples, it quickly became evident that it would not be possible to conceptualise musical development unidimensionally since, for instance, a child's capacity for attending to sounds may well be more advanced than his or her ability to produce them. Hence, at least two dimensions would be required: 'listening and responding', for which the single term 'reactive' ('R') was adopted, and 'causing, creating and controlling', for which the label 'proactive' ('P') was used. In relation to the examples given below, 1, 2, 4, 7, 8, 10, 15, 18, 22, 23, 24 and 26 could reasonably be considered to be entirely or predominantly 'reactive' and 2, 5, 6, 13, 16, 17 and 23, 'proactive'. However, that left a further group of observations (as in examples 3, 9, 11, 12, 14, 19, 20, 21 and 25) in which listening to sounds and making them occurred in the context of participation with others, and it was decided that this form of activity merited the status of a separate dimension, which was termed 'interactive' ('I') (See Table 1). While these dimensions are not conceptually discrete (they variously overlap), the important thing was that they were deemed by practitioners to be *meaningful* and *useful* in terms of categorising the types of musical engagement that they observed.

A number of attempts were made to place examples such as those cited above along each of the three dimensions:

(i) *reactive* (in response to another),
(ii) *proactive* (initiating behaviour without an obvious external prompt), or
(iii) *interactive* (with another)

basing their position within a dimension on the notion of contingency (that is, by seeking to identify each 'level' as a necessary precursor or possible successor to another or others).

Table 1 Observations of musical engagement by children and young people with complex needs.

#	Observation	R	P	I
1	**A** sits motionless in her chair. Her teacher approaches and plays a cymbal with a soft beater, gently at first, and then more loudly, in front of her and then near to each ear. **A** does not appear to react.	✓		
2	**R** is lying in the 'Little Room' (a small, resonant environment, with soundmakers suspended within easy reach), vocalising in an almost constant drone. Occasionally a sudden movement of her right arm knocks her hand against a bell. Each time, she smiles and her vocalising briefly turns into a laugh.	✓	✓	
3	**M**'s music therapy session begins – as ever – with the 'Hello' song. And as ever, he makes no discernible response.			✓
4	**B** startles and then smiles when someone drops a tray of cutlery in the dining room.	✓		
5	**T** brushes her left hand against the strings of guitar that someone is holding near to her. There is a pause and then she raises her hand and brushes the strings again, and then again.		✓	
6	**Y** usually makes a rasping sound as he breathes. He seems to be unaware of what he is doing, and the rasping persists, irrespective of external stimulation. His class teacher has tried to see whether **Y** can be made aware of his sounds by making them louder (using a microphone, amplifier and speakers), but so far this approach has met with no response.		✓	
7	**G**'s teacher notices that he often turns his head towards her when she sings to him, but she has never noticed him turn towards other sounds.	✓		
8	**W** giggles when people repeat patterns of syllables to her such as 'ma ma ma ma ma', 'da da da da da', or 'ba ba ba ba ba'.	✓		
9	**J**'s short, sharp vocalisations are interpreted by his teachers and carers to mean that he wants someone to vocalise back.			✓
10	**K** gets very excited when she hears the regular beat on the school's drum machine.	✓		
11	**U** loves 'call and response' games and joins in by making his own sounds.			✓
12	**C** copies simple patterns of vocalisation – imitating the ups and downs of her speech and language therapist's voice.			✓
13	**S** waves her hand more and more vigorously through an ultrasonic beam, creating an ever wider range of swirling sounds.		✓	
14	**N** often vocalises in response to vocal sounds that are made close to him, although he does not seem to copy what he hears.			✓
15	**Z** loves the sound of the bell tree and, when it stops, she rocks in her chair which staff interpret as a gesture for 'more'.	✓		
16	**D** has been able to make a wide range of vocal sounds since he started school, but recently he has begun to make more melodious vowel sounds, which he repeats in short sequences.		✓	
17	**L** hums distinct patterns of notes and repeats them. Her favourite pattern sounds rather like a playground chant, and her music teacher notices that she repeats it from one day to the next, though not always starting on the same note.		✓	
18	**F** cries whenever she hears the 'goodbye' song. It only takes the first two or three notes to be played on the keyboard for her to experience a strong emotional reaction.	✓		

Table 1 (*Continued*).

#	Observation	R	P	I
19	**H** enjoys copying simple rhythms on an untuned percussion instrument. Now he is started making his own rhythms up too, and he flaps his hands with delight when someone else copies what he is doing.			✓
20	**E** just laughs and laughs when people imitate her vocalisations.			✓
21	**V** vocalises to get his therapist to make a sound – it does not matter what, he just seems to relish having a vocal response.			✓
22	**I** always gets excited in the middle of the 'Slowly/Quickly' song, anticipating the sudden change of pace.	✓		
23	**O** scratches the tambourine, making a range of sounds. Whenever he plays near the rim and the bells jingle, he smiles.	✓	✓	
24	**Q**'s eye movements intensify when he hears the big band play.	✓		
25	**X** distinctly tries to copy high notes and low notes in vocal interaction sessions.			✓
26	**P** has learnt to associate his teacher's jangly bracelet, which she always wears, with her: for him, it seems to be an important part of her identity.	✓		

For instance, it seems clear that an awareness of sound (as in Example 2) must precede a differentiated response (as in Example 7), which in turn must precede the capacity to anticipate change (Example 22). This heuristic approach was necessary since the evidence available largely comprised snapshots of *different* children at various stages of development, rather than longitudinal data on the *same* children as they matured, which would have offered greater certainty as to the nature of developmental change. Taking a more exploratory tack, though, was deemed valid as a preliminary step for two reasons: first, since it was not yet known what the appropriate data to collect would be; and second, since it was believed that meaningful longitudinal studies of children with complex needs would be likely to last for several years at least (although, as we shall see, this concern was to an extent unwarranted). However, it was felt that once an initial model had been developed, this could subsequently be used to inform longer-term empirical work – as well as being informed by it.

As potential sequences of stages of musical engagement emerged, they were mapped onto what is known of 'typical' early musical development (drawing on the well-established literature in this field, ranging, for example, from Moog 1968/1976; Dowling 1982 and Hargreaves 1986 to Trehub 1990, 2003; Fassbender 1996; Lecanuet 1996; Papoušek 1996; Trevarthen 2002 and Welch 2006) as a way of benchmarking what was being proposed but without imposing potentially inappropriate constraints, since it was not known just how relevant 'usual' development was to the way in which the musicality of children with complex needs evolves.

A third influence was Ockelford's 'zygonic' theory of musical-structural cognition (for example, 2002, 2005, 2009), which seeks to explain how music makes intuitive sense through the (typically nonconscious) recognition of repetition and regularity in the domains of pitch and perceived time – the thinking being that, since such a capacity does not arise in people fully fledged, it must evolve as a strand in musical development, implying that the theory may provide a useful way of conceptualising stages within that process of maturation.

A number of attempts were made to draw the three sources of evidence (observations, the findings of 'mainstream' child psychology and zygonic theory) into a single coherent music-developmental framework for young people with complex needs.

Table 2. The six levels underpinning the *Sounds of intent* framework (acronym 'CIRCLE').

Level	Description	Core cognitive abilities
1	Confusion and **C**haos	None: no awareness of sound as a distinct perceptual entity
2	Awareness and **I**ntentionality	An emerging awareness of sound as a distinct perceptual entity and of the variety that is possible within the domain of sound
3	Relationships, Repetition, **R**egularity	A growing awareness of the possibility and significance of *relationships* between the basic aspects of sounds
4	Sounds Forming **C**lusters	An evolving perception of *groups* of sounds, and the relationships that may exist between them
5	Deeper Structural **L**inks	A growing recognition of whole pieces, and of the frameworks of pitch and perceived time that lie behind them
6	Mature Artistic **E**xpression	A developing awareness of the culturally determined 'emotional syntax' of performance that articulates the 'narrative metaphor' of pieces

Different configurations were proposed, discussed and systematically trialled in the field, with practitioners offering qualitative feedback, supplemented with quantitative data gathered by a research assistant. This information enabled the research team iteratively to refine the model, enabling it to capture a wider range of musical behaviours, and enhancing intra- and inter-domain consistency (Welch et al. 2009). Eventually, six fundamental levels of music processing capacity emerged, which offered both an intuitively satisfying and theoretically coherent scheme. These are set out in Table 2.

Extending these six levels across the three domains of musical engagement that had been identified gave rise to the following 'headlines' or 'level descriptors' of reactivity, proactivity and interactivity (see Figure 1). These were arranged as 18 segments in circular form, which practitioners on the *Sounds of intent* research team regarded as being the most appropriate metaphor for children's development, ranging from the centre, with its focus on self, outwards, to increasingly wider communities of others.

For ease of reference, levels were ranked from 1–6, each of which could be preceded with an 'R', a 'P' or an 'I', to indicate, respectively, reactive, proactive or interactive segments. Each was broken down into four more detailed elements, as the examples in Table 3 show.

Although this table is regular in appearance, the way in which the level descriptors and elements relate to each other within and between the reactive, proactive and interactive domains is complex. Level descriptors form a hierarchy whereby, within each domain, achievement at higher levels is dependent on the accomplishment of all those that precede. So, for example, in the interactive domain, I.4, 'Engages in musical dialogues, creating and recognising coherent connections between groups of sounds', could only occur following I.3, 'Interacts by imitating other's sounds or recognising self being imitated' and (therefore) after accomplishing I.2 and I.1. *Between* domains, there is a broad flow of contingency that runs from reactive to proactive and then to interactive. For instance, in the proactive domain, intentionally making patterns in sound through repetition (P.3) depends on the capacity to recognise simple patterns in sound (R.3), while interacting with another or others using sound (I.2) relies on the ability to

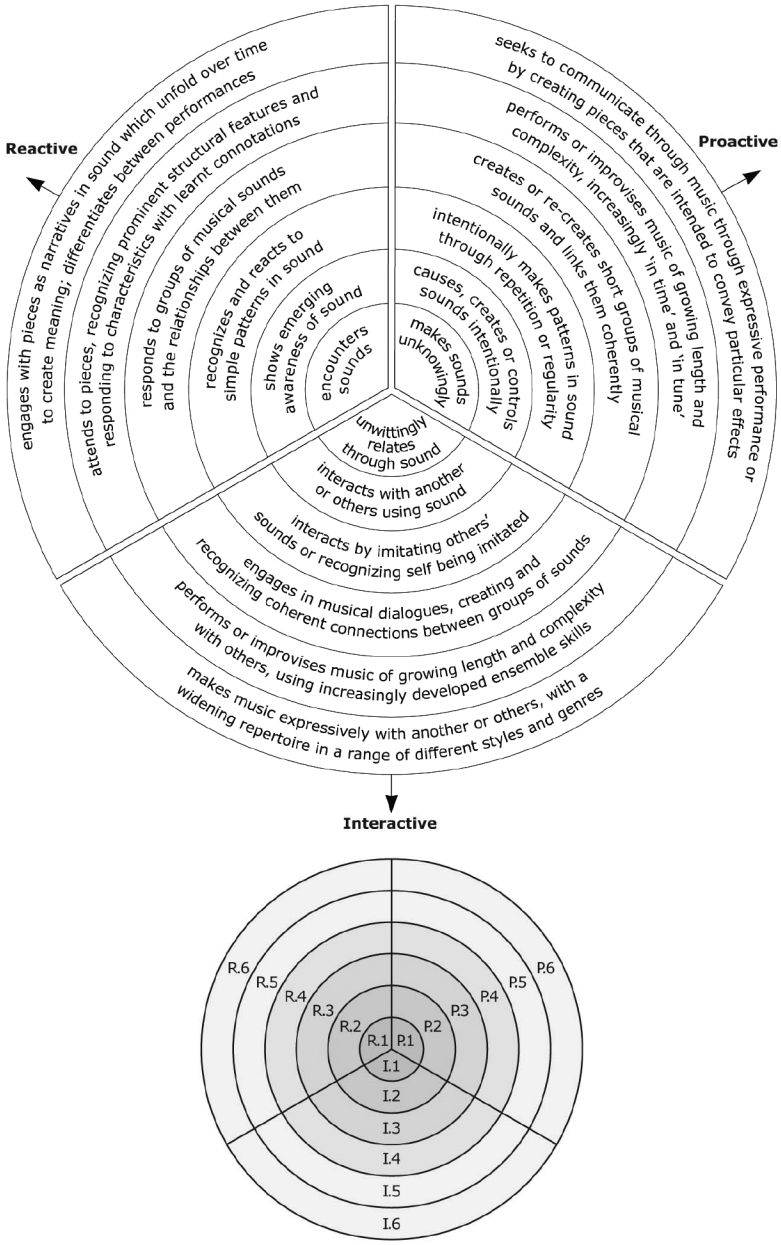

Figure 1. Visual representation of the *Sounds of intent* framework.

cause, create or control sounds intentionally (P.2), which in turn requires an awareness of sound (R.2). The pattern of contingencies that links the 72 elements is more intricate. Although in some cases there is a necessary connection between elements at different levels *within* domains (for example, a pupil could not engage in intentional repetition – P.3.A – before having the wherewithal to make a variety of sounds – P.2.B) and *between* them (for instance, imitating the sounds made by another – I.3.A – similarly requires functioning at the level of P.2.B), this is not always the case. It is perfectly

Table 3 Elements at Levels 1–3 in the reactive, proactive and interactive domains.

	Reactive domain		
Level	R.1	R.2	R.3
Descriptor	**encounters sounds**	**shows an emerging awareness of sound**	**responds to simple patterns in sound**
Element A	is exposed to a rich variety of sounds	shows awareness (of a variety) of sounds	responds to the repetition of sounds
Element B	is exposed to a wide range of music	responds differently to sound qualities that differ (e.g., loud/ quiet), and/or change (e.g., getting louder)	responds to a regular beat
Element C	is exposed to music in different contexts	responds to sounds increasingly independently of context	responds to patterns of regular change
Element D	is exposed to sounds that are linked to other sensory input	responds to sounds that are linked to other sensory input	responds to sounds used to symbolise other things
	Proactive domain		
Level	P.1	P.2	P.3
Descriptor	**makes sounds unknowingly**	**makes or controls sounds intentionally**	**makes simple patterns in sound intentionally**
Element A	sounds made by life-processes are enhanced and/or involuntary movements are used to make sounds	makes sounds intentionally, through an increasing variety of means and with greater range and control	intentionally makes simple patterns through repetition
Element B	sounds are made or controlled through co-active movements	expresses feelings through sound	intentionally makes a regular beat
Element C	activities to promote sound production occur in a range of contexts	produces sounds intentionally in a range of contexts	intentionally makes patterns through change
Element D	activities to promote sound production are multisensory in nature	produces sounds as part of multisensory activity	uses sound to symbolise other things

Table 3 (*Continued*).

	Interactive domain		
Level	I.1	I.2	I.3
Descriptor	**relates unwittingly through sound**	**interacts with others using sound**	**interacts imitating others' sounds or through recognising self being imitated**
Element A	co-workers stimulate interaction by prompting with sounds and responding to any sounds that are made	sounds made by another stimulate a response in sound	imitates the sounds made by another
Element B	co-workers model interaction through sound	sounds are made to stimulate a response in sound	shows awareness of own sounds being imitated
Element C	activity to promote interaction through sound occurs in a range of contexts	interactions occur increasingly independently of context	imitates simple patterns in sound made by another
Element D	some interaction is multisensory in nature	interaction through sound engages other senses too	recognises own patterns in sound being imitated

conceivable that a child could intentionally make simple patterns through a regular beat (P.3.B), for example, before using sounds to symbolise particular people, places or activities (P.2.D). However, the research team felt that intricacies of this type were an inevitable consequence of the complicated nature of musical development, which is multi-layered and multi-stranded. At any given time, it was unlikely that the framework would indicate a pupil as being at a particular *point* on a developmental scale, but, rather, having a music-developmental *profile*, incorporating attainment at different levels in relation to a number of different elements. However, given these complexities, how could the framework work in practice as a tool for assessment, enabling practitioners to record pupils' levels of achievement and change, to draw comparisons between the attainment and progress of individuals and groups, and to gauge the potential impact of different music-educational and therapeutic interventions?

The first steps in this direction had previously been taken by Fern-Chantele Carter, research officer on Phase 1 of the *Sounds of intent* project, who showed (using an earlier version of the framework, with only five levels, which pertained solely to pupils with PMLD) that the model could potentially be used to enable tendencies and trends to be identified (Welch et al. 2009). With support from members of an advisory group, Carter assessed 68 pupils over a period of two terms, making a total of 630 judgements as to where she believed pupils were functioning on the framework in a given session. These levels were mapped onto participants' ages, and although the correlation between the two was weak, (r=.289, p=.018), older participants did tend to be more highly rated (see Figure 2). For sure, there was a very wide range of individual variation, with some young participants functioning at a higher level than their older peers. Nonetheless, Carter's work held out the prospect of being able to gauge the musical progress in pupils with profound learning difficulties using a framework of the type developed by the *Sounds of intent* team.

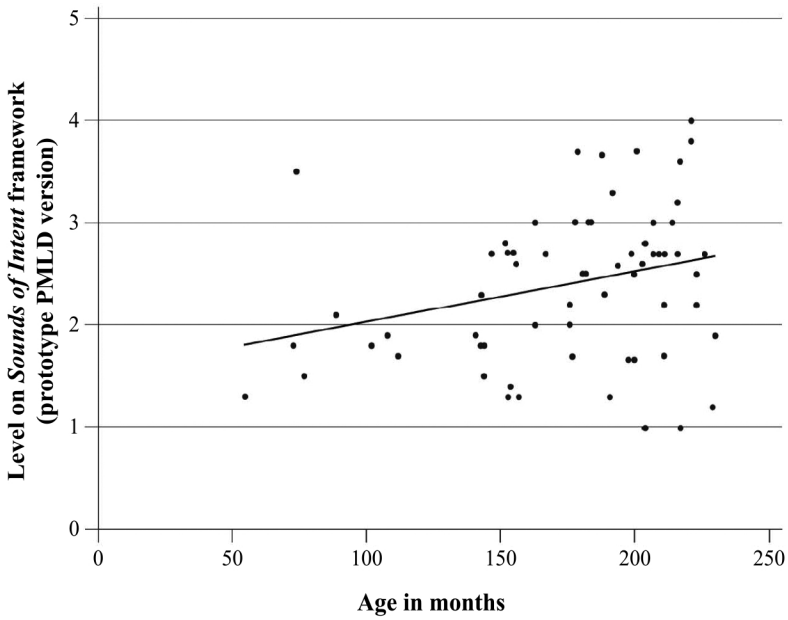

Figure 2. The relationship between age and level of musical attainment in pupils with PMLD, gauged using an early version of the *Sounds of intent* framework.

While Carter's fieldwork provided a promising start – and it was clear that refinements to the protocols for gathering and ranking the data would be required to enable meaningful longitudinal studies of individual children and young people to be made, since, even in as long a period as a year – it seemed likely that they would at most make very small steps of progress. This next move was made by Evangeline Cheng, a doctoral student at the Institute of Education, University of London, who joined the research team. She observed six young people with complex needs engaging in weekly music sessions over a period of two terms (around six months), and assessed them in relation to the *elements* set out in Table 3 (rather than the level descriptors that Carter had used), allowing her to identify and rate a wider range of musical behaviours than had previously been possible. Moreover, she recorded the *frequency* with which given levels of engagement were observed, session by session. The example of an 11-year-old boy, 'J', follows.

The documentation held by J's school indicated that he had severe learning difficulties, cerebral palsy, visual impairment, a speech, language and communication difficulty and epilepsy. J was able to say a few single words including 'hi, bye, no, me, more, book' and the names of a few members of staff who had been working with him for some years. He would nod for 'yes' and sometimes used a switch to play pre-recorded messages conveyed between home and school. J used a wheelchair and needed help with life skills including eating, dressing and personal hygiene.

Cheng observed J for 21 weeks, a period that she divided for the purposes of analysis into two phases. Phase 1, which ran from Week 1 to Week 14, entailed sessions with the school's music teacher, involving songs and musical games to promote socialisation and language acquisition, and rhythmic activities with untuned percussion instruments. In Phase 2 (from Week 15 to Week 21), J's class participated in a special music community link project called 'Music Makers Sing!' with two members of a professional London orchestra and a music technician. Their presence meant that each child had the opportunity to interact more intensively with adults through music on a one-to-one basis, and switches were introduced to facilitate proactive participation.

In total, Cheng observed 513 instances of musical engagement on J's part: 184 'reactive', 181 'proactive', and 148 'interactive' – an average respectively of 9, 9 and 7 occurrences per session. These are summarised, phase by phase, in Table 4.

Combining the reactive, proactive and interactive scores for levels 2, 3, 4 and 5 shows a distinct shift in J's global *Sounds of intent* profile between Phases 1 and 2 of the observation period – the first time that the framework had been used to show change in a pupil's musical engagement over time (see Figure 3).

However, in the process of Cheng's analysis, it became evident that each element potentially embraced a *range* of behaviours. For example, P.2.B, 'creates an increasing diversity of sounds intentionally through an increasing variety of means' could refer equally to a child vocalising within a limited pitch range and tapping a drum with the fingers of one hand, and a young person making a wide range of vocal sounds and playing a number of untuned percussion instruments. Similarly, I.3.A, 'imitates the sounds made by another' could denote a pupil echoing a single vocal sound made by his music teacher, or a client copying a variety of vocalisations and instrumental sounds made by her music therapist. Hence it became apparent to the research team that more subtle intra-personal changes – particularly important for practitioners working in the domain of PMLD – could be recorded if elements were themselves broken down into different degrees of engagement. To test this principle out, a further episode of exploratory empirical work was planned.

Table 4 Cheng's observations of 'J', using the *Sounds of intent* framework.

		Weeks 1–14		Weeks 15–21	
Domain	Level	Frequency	%	Frequency	%
Reactive	R.2	6	6	0	0
	R.3	23	22	10	12.5
	R.4	48	45.5	24	30.5
	R.5	28	26.5	45	57
	R.6	0	0	0	0
	Total	**105**	**100**	**79**	**100**
Proactive	P.2	12	11	1	1
	P.3	40	36	9	11
	P.4	35	31	20	25
	P.5	25	22	39	48
	P.6	0	0	0	0
	Total	**112**	**100**	**69**	**100**
Interactive	I.2	18	22	9	13.5
	I.3	8	10	1	1.5
	I.4	44	53.5	42	63.5
	I.5	12	14.5	14	21.5
	I.6	0	0	0	0
	Total	**82**	**100**	**66**	**100**

Method

Research participants

A cohort of young people with PMLD (N=20) whose parents were willing for them to participate in the *Sounds of intent* project was identified at Linden Lodge School in Wandsworth, London. The pupils were grouped into three classes largely according to age (11 years 11 months to 14 years 3 months; 15 years 1 month to 17 years 3 months; and 17 years to 17 years 7 months; M=15 years 3 months; SD=2.03). They came from a wide range of ethnic and cultural backgrounds from across London and the south-east of England. All had profound levels of global developmental delay. None was verbal and the great majority were wheelchair users. Many had some degree of visual impairment.

Materials

The materials used for the study were taken exclusively from *All join in!* (Ockelford 1996): a set of 24 songs that were originally designed to offer a framework for making music with young people who were visually impaired and had learning difficulties (although they subsequently proved effective in a range of contexts, including for those working with children in the early years, and with pupils who have autism spectrum disorder). The topics of the songs are 'self and other', 'time and place', 'things around' and 'music and sound'. Throughout, the language used is simple and concrete, with the conscious avoidance of abstract concepts or metaphor (that characterise so many children's songs). Key words and phrases are consistently allocated the

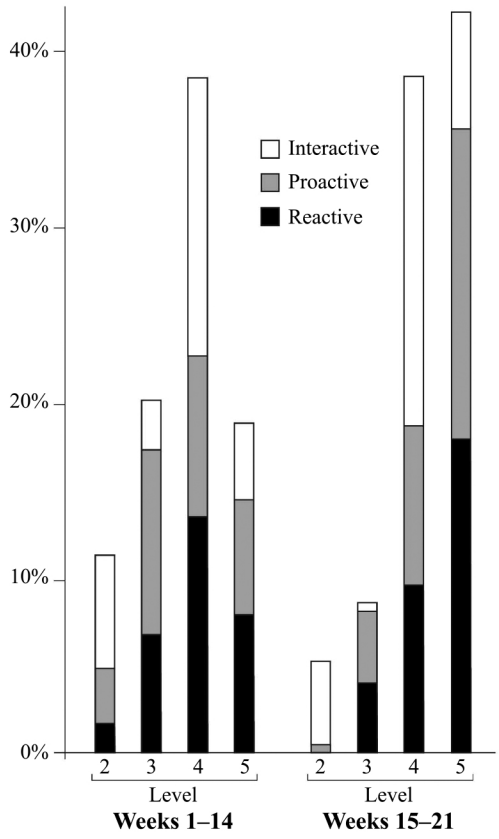

Figure 3. The change in J's profile of musical engagement over time.

same rhythm and, where possible, also the melodic shape, opening up the possibility of musical fragments acquiring symbolic meaning in their own right. Musically, the songs conform to what could reasonably be described as the Western popular 'musical vernacular' of the late twentieth century, with simple rhythms, regular metrical structures and diatonic tonal frameworks. Melodies are constrained in pitch range and repetitive. In summary, the songs are intended to be as easy to learn and engage with as possible.

Environment and context

The first author arranged to take the three classes' weekly music lessons in the spring and summer terms of 2009 (from January to July, with breaks for the half term and Easter holidays), a total of 24 sessions of 45 minutes each (amounting to 18 hours of musical exposure). The format of each session was the same. Work took place in the pupils' classrooms (the environments with which they were most familiar). Each had a one-to-one teaching assistant. Everyone sat in a circle that included the first author (Ockelford), who had access to a touch-sensitive electric keyboard (set to sound like a piano). Lamorna Jewell-Gore, the music teacher at Linden Lodge, who knew the

children very well, participated in all of the sessions, largely through supporting the staff when she was not formally observing the children. A wide range of untuned percussion instruments was available.

Procedure

Each session used the *All join in!* framework, which comprises introductory songs (A and B) and concluding songs (D and E) that are fixed, with a menu of possibilities (C_1 to C_5) in between (see Figure 4).

Once a month (on six occasions), Jewell-Gore stepped back from proceedings and purposively observed each of the children and young people in action, noting examples of musical reactivity, proactivity or interactivity for each that appeared to be

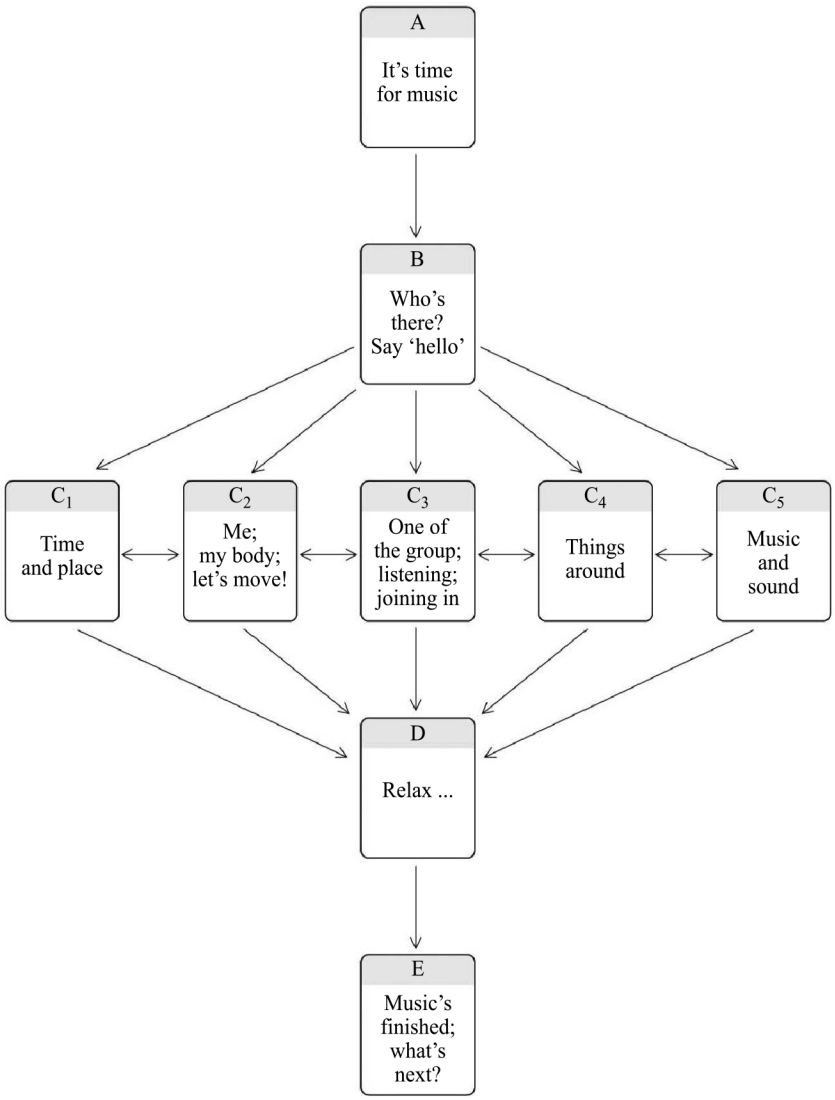

Figure 4. The structure of *All join in!*

typical of their engagement in the session concerned. Written comments were supplemented with some video recordings for later reference.

Initial data processing

Subsequently, Jewell-Gore mapped the behaviours that she had observed and recorded onto the *Sounds of intent* framework, gauging which element offered the best fit for each description, and grading them as 'low' (that is, *just* achieving the level of engagement that was described), 'high' (fulfilling the terms of the descriptor *comprehensively*), or 'medium' (for levels of attainment *between* the two extremes). For example:

- 'J' showed slight reaction to loud noises but no reaction to localised instruments playing. Did not…change reaction to change in tempo/dynamics – assessed as **R.1.A (low)**
- 'G' laughed each time the tambourine was hit, and responded to sudden chord changes – assessed as **R.2.A (medium)**
- 'A' vocalised throughout songs and changed notes with key change – assessed as **I.3.A (low)**
- 'B' laughed at a particular motif played on the piano – assessed as **R.4.A (low)**
- 'L' reacted to people playing matching sounds, eyes looking from one to the other – assessed as **R.3.A (low)**
- 'D' listened to sounds made by the other children, sometimes just looking, sometimes smiling, sometimes laughing – assessed as **R.2.B (high)**
- 'Q' laughed a lot when his own made-up musical sounds were imitated (the 'wah wah' song) – assessed as **I.3.B (high)**

To facilitate analysis of the data, each was assigned a rank on an ordinal scale, according to its position within the *Sounds of intent* framework, such that activity at Level 1 (low) was categorised as '1', Level 1 (medium) was classed as '2', Level 1 (high) was allocated '3', and so forth, with the following result (see Table 5):

Results and discussion

The results were as follows (see Table 6).

Over the course of the sessions, there is movement away observed musical engagement at Level 1 and an attendant increase in classifications at Level 3 – a high degree of variability in the data notwithstanding (see Figure 5).

The underlying trend in this changing pattern of observations can be gauged by comparing means of the reported ranks, session by session. This offers a proxy indication of the children's changing perceived level of musical engagement (Figure 6).

This implies a marked rate of musical development (equivalent to one *Sounds of intent* level in 18 months), which experience of working with children with PMLD suggests would not be sustainable. Hence it is reasonable to assume that there were exceptional factors at work in the study, which potentially include:

- the young people's growing familiarity with the materials, the routine of the sessions, and with Ockelford himself, which may have enabled them to engage musically more fully as time went on;

Table 5 The *All join in!* elements ranked on an 18-point ordinal scale.

Sounds of Intent elements				Rank
R.1.A(L) P.1.A(L) I.1.A(L)	R.1.B(L) P.1.B(L) I.1.B(L)	R.1.C(L) P.1.C(L) I.1.C(L)	R.1.D(L) P.1.D(L) I.1.D(L)	1
R.1.A(M) P.1.A(M) I.1.A(M)	R.1.B(M) P.1.B(M) I.1.B(M)	R.1.C(M) P.1.C(M) I.1.C(M)	R.1.D(M) P.1.D(M) I.1.D(M)	2
R.1.A(H) P.1.A(H) I.1.A(H)	R.1.B(H) P.1.B(H) I.1.B(H)	R.1.C(H) P.1.C(H) I.1.C(H)	R.1.D(H) P.1.D(H) I.1.D(H)	3
R.2.A(L) P.2.A(L) I.2.A(L)	R.2.B(L) P.2.B(L) I.2.B(L)	R.2.C(L) P.2.C(L) I.2.C(L)	R.2.D(L) P.2.D(L) I.2.D(L)	4
R.2.A(M) P.2.A(M) I.2.A(M)	R.2.B(M) P.2.B(M) I.2.B(M)	R.2.C(M) P.2.C(M) I.2.C(M)	R.2.D(M) P.2.D(M) I.2.D(M)	5
R.2.A(H) P.2.A(H) I.2.A(H)	R.2.B(H) P.2.B(H) I.2.B(H)	R.2.C(H) P.2.C(H) I.2.C(H)	R.2.D(H) P.2.D(H) I.2.D(H)	6
R.3.A(L) P.3.A(L) I.3.A(L)	R.3.B(L) P.3.B(L) I.3.B(L)	R.3.C(L) P.3.C(L) I.3.C(L)	R.3.D(L) P.3.D(L) I.3.D(L)	7
R.3.A(M) P.3.A(M) I.3.A(M)	R.3.B(M) P.3.B(M) I.3.B(M)	R.3.C(M) P.3.C(M) I.3.C(M)	R.3.D(M) P.3.D(M) I.3.D(M)	8
R.3.A(H) P.3.A(H) I.3.A(H)	R.3.B(H) P.3.B(H) I.3.B(H)	R.3.C(H) P.3.C(H) I.3.C(H)	R.3.D(H) P.3.D(H) I.3.D(H)	9
R.4.A(L) P.4.A(L) I.4.A(L)	R.4.B(L) P.4.B(L) I.4.B(L)	R.4.C(L) P.4.C(L) I.4.C(L)	R.4.D(L) P.4.D(L) I.4.D(L)	10
R.4.A(M) P.4.A(M) I.4.A(M)	R.4.B(M) P.4.B(M) I.4.B(M)	R.4.C(M) P.4.C(M) I.4.C(M)	R.4.D(M) P.4.D(M) I.4.D(M)	11
R.4.A(H) P.4.A(H) I.4.A(H)	R.4.B(H) P.4.B(H) I.4.B(H)	R.4.C(H) P.4.C(H) I.4.C(H)	R.4.D(H) P.4.D(H) I.4.D(H)	12
R.5.A(L) P.5.A(L) I.5.A(L)	R.5.B(L) P.5.B(L) I.5.B(L)	R.5.C(L) P.5.C(L) I.5.C(L)	R.5.D(L) P.5.D(L) I.5.D(L)	13
R.5.A(M) P.5.A(M) I.5.A(M)	R.5.B(M) P.5.B(M) I.5.B(M)	R.5.C(M) P.5.C(M) I.5.C(M)	R.5.D(M) P.5.D(M) I.5.D(M)	14
R.5.A(H) P.5.A(H) I.5.A(H)	R.5.B(H) P.5.B(H) I.5.B(H)	R.5.C(H) P.5.C(H) I.5.C(H)	R.5.D(H) P.5.D(H) I.5.D(H)	15
R.6.A(L) P.6.A(L) I.6.A(L)	R.6.B(L) P.6.B(L) I.6.B(L)	R.6.C(L) P.6.C(L) I.6.C(L)	R.6.D(L) P.6.D(L) I.6.D(L)	16
R.6.A(M) P.6.A(M) I.6.A(M)	R.6.B(M) P.6.B(M) I.6.B(M)	R.6.C(M) P.6.C(M) I.6.C(M)	R.6.D(M) P.6.D(M) I.6.D(M)	17
R.6.A(H) P.6.A(H) I.6.A(H)	R.6.B(H) P.6.B(H) I.6.B(H)	R.6.C(H) P.6.C(H) I.6.C(H)	R.6.D(H) P.6.D(H) I.6.D(H)	18

Table 6 Observations of 20 young people with PMLD over a six-month period using the *Sounds of intent* framework ranked over 18 different levels.

Name Class	Age (yy.mm) as at 07.09	13.02.09		6.03.09		24.04.09		15.05.09		19.06.09		3.07.09	
B.1	14.03	R.2.A(M)	5	R.2.A(M)	5	R.3.D(L)	7	I.2.A(L)	4	P.4.A(M)	11	I.2.A(H)	6
		P.1.B(H)	3	R.2.B(M)	5	P.2.A(L)	4						
		P.2.A(L)	4										
J.1	11.11	R.1.A(L)	1	R.2.A(L)	4	ABSENT		R.2.A(L)	4	R.2.A(M)	5	R.2.A(H)	6
								P.1.B(L)	1				
G.1	12.11	I.2.A(H)	6	R.2.A(H)	6	I.2.A(H)	3	P.2.A(H)	6	R.2.A(H)	6	R.2.A(H)	6
		P.2.A(M)	5	R.2.B(M)	5					I.2.A(H)	6	I.3.A(L)	7
		R.2.A(M)	5										
C.1	12.02	R.1.A(L)	1	ABSENT		R.1.A(L)	1	ABSENT		P.1.B(H)	3	R.2.A(H)	6
						R.2.B(L)	4					I.2.A(M)	5
												R.2.B(L)	4
A.1	12.04	R.1.A(L)	1	R.2.A(L)	4	ABSENT		R.2.A(L)	4	R.2.A(M)	5	R.2.B(M)	5
				P.1.B(L)	1			R.2.A(M)	5	I.2.A(M)	5	I.3.B(L)	7
								R.2.B(M)	5	R.2.B(M)	5		
L.1	13.02	R.2.A(M)	5	ABSENT		ABSENT		R.2.A(H)	6	ABSENT		I.2.A(H)	6
								I.2.A(L)	4			R.3.A(M)	8
												I.3.A(L)	7
Z.1	13.04	P.2.A(M)	5	SICK		R.2.A(M)	5	ABSENT		I.3.A(L)	7	R.2.A(H)	6
						P.2.A(M)	5			R.2.B(M)	5	I.3.B(M)	8
						I.2.A(M)	5			R.4.A(L)	10		
F.2	15.01	R.2.B(L)	4	I.3.A(L)	7	R.2.A(L)	4	ABSENT		R.2.A(M)	5	I.3.A(L)	7
		P.2.A(L)	4	R.2.A(L)	4	P.2.A(L)	4			P.2.A(M)	5		
						I.3.A(L)	7						

Table 6 (*Continued*).

Name Class	Age (yy.mm) as at 07.09	13.02.09		6.03.09		24.04.09		15.05.09		19.06.09		3.07.09	
J.2	15.08	P.2.A(M)	5	P.2.A(M)	5	P.3.B(M)	8	R.2.A(M)	5	R.3.A(L)	7	R.2.A(M)	5
		R.3.D(L)	7	P.2.B(M)	5	P.3.C(M)	8	R.3.A(L)	7	P.2.A(M)	5	R.3.A(M)	8
						I.3.C(M)	8					I.3.A(M)	8
						P.2.B(M)	5						
A.2	16.03	P.2.A(M)	5	I.2.B(M)	5	ABSENT		P.2.A(M)	5	R.2.A(M)	5	R.2.A(M)	5
		R.3.D(L)	7	P.2.A(M)	5			R.2.A(M)	5	P.2.A(H)	6	P.2.A(M)	5
		P.2.A(L)	4					R.3.A(M)	8	I.3.A(L)	7	I.3.A(L)	7
		I.3.A(L)	7										
D.2	14.04	P.2.A(M)	5	R.2.A(M)	5	R.2.A(H)	6	R.2.A(M)	5	R.2.B(L)	4	R.2.A(M)	5
		P.1.B(L)	1			R.3.A(L)	7			P.2.A(M)	5	P.2.A(L)	4
M.2	15.06	P.1.B(L)	1	P.2.A(M)	5	ABSENT		P.2.A(M)	5	I.3.A(L)	7	P.2.A(M)	5
		R.2.A(L)	4	R.2.A(M)	5			R.2.B(M)	5	P.2.A(M)	5	R.2.B(L)	4
		R.3.D(L)	7	I.2.A(M)	5								
R.2	16.00	ABSENT		R.2.A(M)	5	P.2.A(M)	5	ABSENT		ABSENT		I.3.A(M)	8
						R.2.A(M)	5					R.2.A(M)	5
						I.2.A(M)	5					R.3.A(M)	8
S.2	17.03	P.2.A(M)	5	R.3.B(L)	7	I.2.A(M)	5	R.2.A(M)	5	ABSENT		P.2.A(H)	6
		R.2.A(M)	5	R.2.A(M)	5	P.2.A(L)	4	P.2.A(M)	5				
E.3	17.07	R.1.A(L)	1	ABSENT		P.2.A(L)	4	P.2.B(L)	3	R.2.B(M)	4	I.3.A(L)	7
						P.2.A(M)	5					R.3.A(L)	7
												R.2.B(M)	5
												I.3.A(L)	7

Table 6 (*Continued*).

Name Class	Age (yy.mm) as at 07.09	13.02.09		6.03.09		24.04.09		15.05.09		19.06.09		3.07.09	
A.3	17.06	R.2.A(L)	4	R.2.A(M)	5	P.2.A(M)	5	P.2.A(M)	5	R.2.A(M)	5	R.2.A(M)	5
				R.3.D(L)	7					P.2.A(M)	5	I.2.A(M)	5
												P.2.A(M)	5
W.3	17.06	R.3.D(M)	8	R.2.A(M)	5	ABSENT		P.2.A(H)	6	I.2.B(M)	5	I.3.B(M)	8
		R.2.B(M)	5					R.3.B(M)	8				
DK.3	17.00	R.3.D(M)	8	ASLEEP		I.2.A(M)	5	R.2.A(M)	5	ASLEEP		P.2.B(M)	5
		P.2.A(M)	5			P.2.A(M)	5						
DC.3	17.03	R.2.A(L)	4	P.2.A(M)	5	ABSENT		P.2.A(M)	5	P.2.A(M)	5	ABSENT	
Q.3	17.07	R.2.A(M)	5	P.2.A(H)	7	ABSENT		ABSENT		ABSENT		ABSENT	
		R.3.D(M)	8	I.3.B(H)	9								
		R.3.C(M)	8	P.2.A(H)	6								

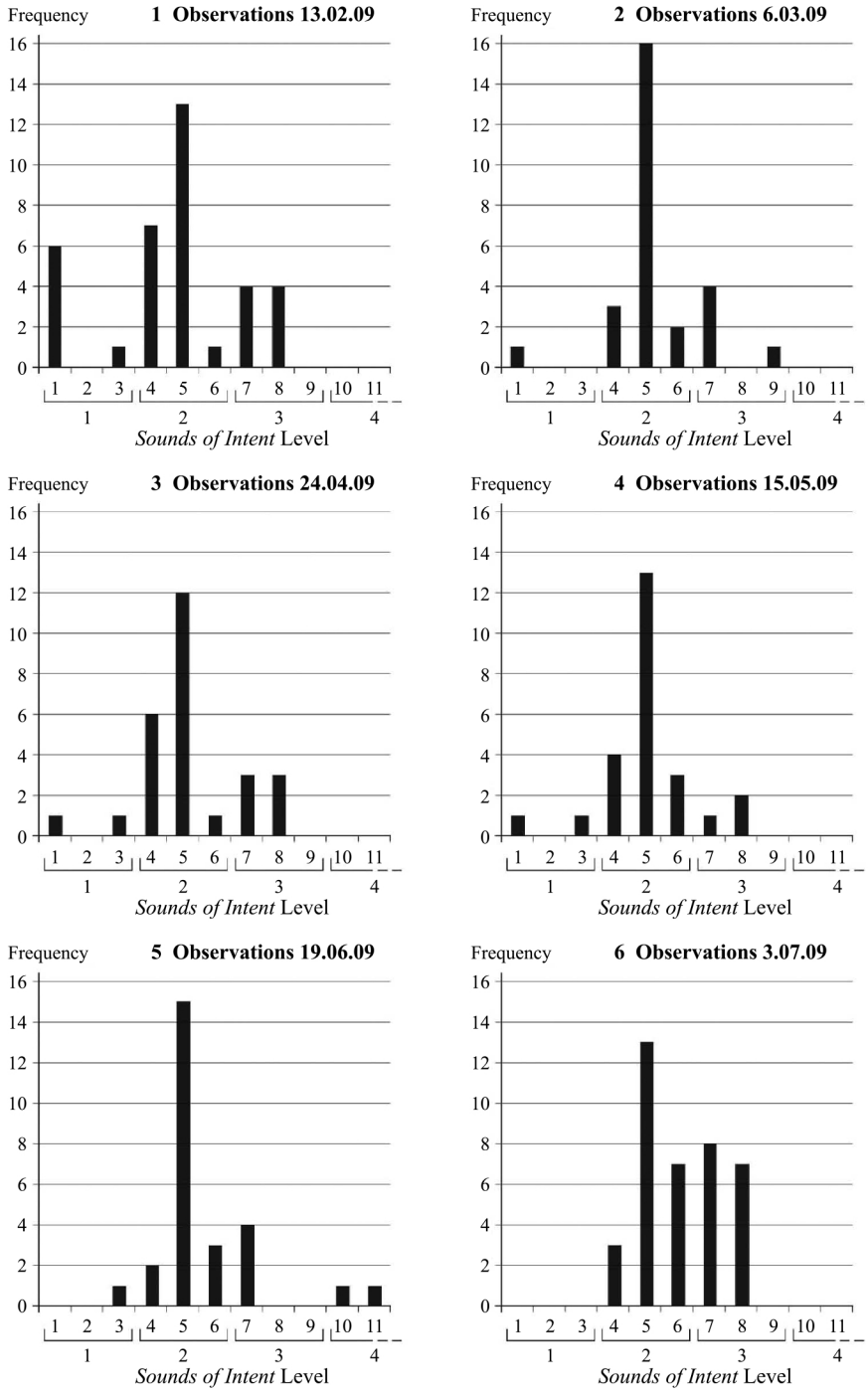

Figure 5. Changing pattern of Jewell-Gore's observations over the six months of the intervention.

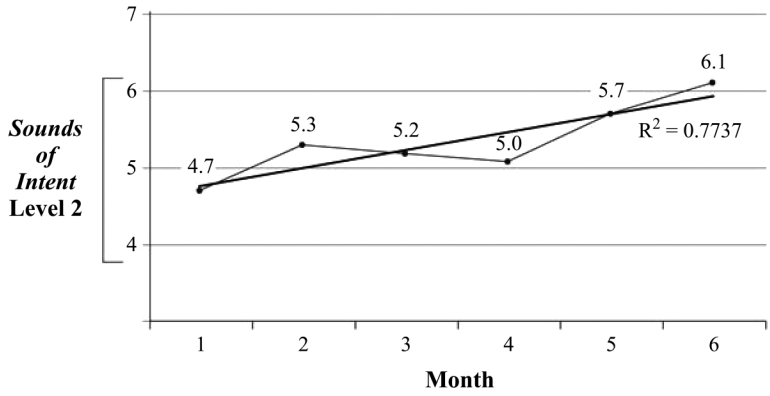

Figure 6. The change in the means of ranked observations per session offers a proxy indication of the children's presumed advancing levels of musical engagement.

- Ockelford's deepening knowledge of the young people, which may have enabled him to scaffold the young people's interactions more effectively as the sessions progressed;
- Jewell-Gore's practice in using the *Sounds of intent* framework, which may have meant her observations became more pertinent and perceptive over the six months; and
- Jewell-Gore's wish for progress, which may have exerted a subconscious influence on her categorisation of musical behaviours, particularly towards the end of the intervention period.

One way of cross-checking the results is to review the data from the perspective of individual students, taking the six-month intervention as a relatively narrow window on a broader period of potential longitudinal change. Mapping mean ranks onto chronological ages suggests that, in general terms, progress may often occur at a much slower rate than Jewell-Gore's observations suggest (see Figure 7).

Analysing the data in this way shows a rise of just over one rank in six years. This equates to around one tenth of the increase shown longitudinally. That is to say, any or all of the context-specific factors listed above may account for the great majority of the rise in the levels of musical engagement that were observed, or it could be that the intervention was particularly effective at engendering musical development, or both influences may have played a part. A great deal more data would be required to isolate and quantify the different ingredients in the mix, and to ascertain how they interrelate. The important thing is that this may be possible using the *Sounds of intent* approach.

A further and similar comparison can be drawn, if we compare the Linden Lodge findings with those obtained by Carter (see Figure 2), bearing in mind that here an earlier version of the *Sounds of intent* framework was used, in which Levels 2 and 3 correspond in approximate terms to Level 2 in the later version (Ockelford 2008, 92). Therefore, we should treat any comparison made with considerable caution. Nonetheless, Carter's data suggest a rise of around one rank every ten years, rather lower than the Linden Lodge data suggest. The key thing is this, though: both studies and their proxy indicators point, in general terms, in the same direction – for pupils with PMLD, music-developmental progress is possible, but will be made in tiny increments, leading to

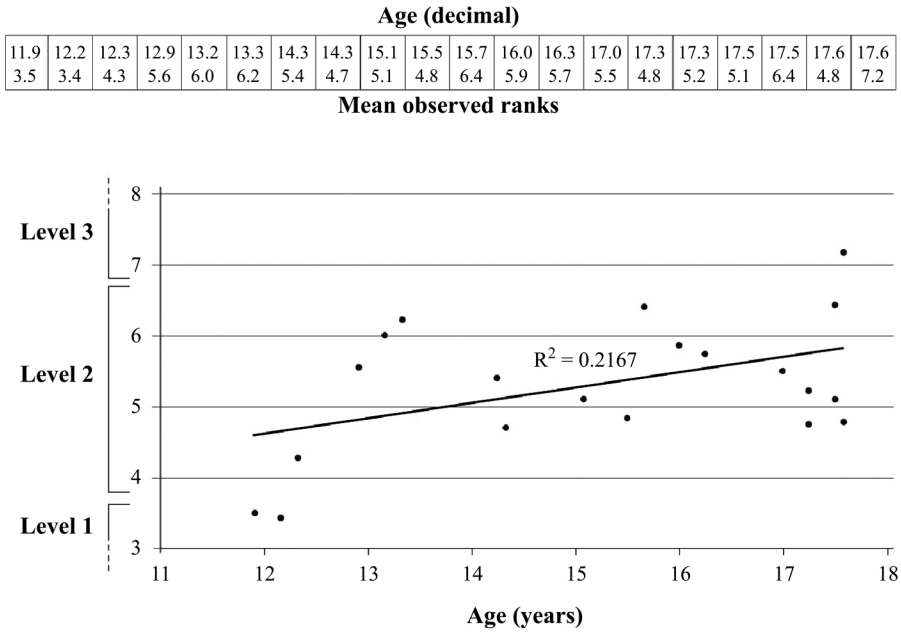

Figure 7. Observed level of musical engagement mapped onto age.

change over a child's school life that, in the absence of sustained, specialist intervention, is likely to be equivalent to between a half and one level on the *Sounds of intent* framework.

Next steps

Change in musical behaviour of this small order of magnitude suggests that, to be sufficiently sensitive for practitioners to chart progress meaningfully over time, observational schedules associated with the *Sounds of intent* framework will need to be even more fine-grained than the system used by Jewell-Gore. Moreover, the work of Cheng suggests that, whatever protocol is devised, this should take into account not only children's levels of engagement, but consider also the relative frequency with which particular behaviours occur. Hence, a system along the following lines is proposed, in which both these parameters figure equally (see Figure 8).

Clearly, the issue with a detailed protocol such as this is its usability from a practitioner's point of view. However, discussions with teachers and therapists on the *Sounds of intent* research team has indicated that such a system would be manageable if it were to be accessed through an appropriate software package that used a touch-screen interface. That is to say, practitioners could record their observations of a pupil's musical behaviours on a range of (commercially available) mobile devices as and when they occurred, in the classroom or elsewhere, by selecting options from a series of drop-down menus, structured around the *Sounds of intent* framework and its elements. These could be supplemented, as appropriate, with audio and video recordings. Data would be processed and stored automatically for later retrieval.

The practicality of such a system is currently being developed and tested as part of the ongoing *Sounds of intent* research. This will enable a great deal more data to be

Gauging a participant's level of engagement	Score
No evidence	0
Reacts differentially to two contrasting qualities of sound or more, and/or to marked change	1
Reacts differentially to three or more differing qualities of or change in sound	2
Reacts differentially to four or more differing qualities of or change in sound	3
Reacts differentially to five or more differing qualities of or change in sound	4
Reacts differentially to six or more differing qualities of or change in sound	5

Gauging consistency	Score
Responses are *never* observed	0
Responses are observed *rarely* (on around one in eight occasions or fewer)	1
Responses are observed *occasionally* (on around one in four occasions)	2
Responses are observed *regularly* (on around one in two occasions)	3
Responses are observed *frequently* (on around three in four occasions)	4
Responses are observed *consistently* (on around seven in eight occasions or more)	5

Consolidating the two

Multiply the 'level of engagement' score by the 'consistency' score. Change can be gauged by comparing scores over a period. The minimum score is 0 (where there is no available evidence or a behaviour is never observed) and the maximum score is 25.

Figure 8. Example of proposed protocol that takes into account the level and consistency of musical behaviours within a single *Sounds of intent* element.

captured in a wide range of contexts, and holds out the eventual possibility of a standardised scale or scales of the musical development that may occur in the context of learning difficulties. Future papers will report on the progress that is made.

Conclusion

The notion of 'small steps' is often used in relation to pupils with SLD or PMLD – and the *Sounds of intent* research suggests what this may mean in relation to musical development, in particular by taking into account the levels and frequency of different types of musical engagement. It is believed that the increasingly widespread use of touch-screen technology may make the reality of fine-grained, continuous music-developmental observations a reality in classrooms.

Acknowledgements

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Note

1. Here defined as those with severe learning difficulties (SLD) or profound and multiple learning difficulties (PMLD).

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