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Understanding and Nurturing Musical Development in Children and Young People: The *Sounds of Intent* Project

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Abstract

The research paper reports on the latest fieldwork from a decade-long study into musical behaviour and development in children and young people with complex needs, i.e., severe learning difficulties (SLD) or profound and multiple learning difficulties (PMLD). The current (2011) English school population is 8.123m, of whom 20.6% (approximately 1.7m) are identified as having some form of special educational need (SEN). These include 39,000 children with complex needs (SLD and PMLD, at a ratio of 3:1). However, children with special needs in general are under represented in the music education research literature. This is somewhat surprising given the long-standing interest in music as therapy and also the on-going research within the neurosciences and cognitive psychology to suggest that musical behaviour is one of the core characteristics of the human condition. An initial research survey of music in the special school sector revealed that music was valued, but that schools had little formal guidance or cultural expectation about how to foster musical behaviour in the context of special needs. The survey marked the beginnings of a decade of research activity by the authors of this paper, working in collaboration with schools and parents, to remedy this situation by creating a developmental framework that is grounded in case study evidence. In the latest phase of the *Sounds of Intent* (*SoI*) research, the framework is now being made available on-line to the special school sector. Over an initial two-month period, n=42 colleagues in special schools have begun to use the *SoI* framework, generating data on n=172 children. An analysis of the distribution of the teachers' observational assessment data reveals a wide diversity of musical behaviours in their pupils, but

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with no significant gender, nor ethnicity differences. However, analysis by SEN categories suggests that there may be characteristic differences in these group's music behaviour profiles, related to the nature and severity of the disability. Nevertheless, it is extremely rare for any child not to demonstrate some form of engagement with music. Overall, the research indicates that the new, on-line *SoI* developmental framework is already beginning to assist participant teachers in improving the range and quality of their music education activities. It is also proving to be a useful research tool that will enable us to build a much more detailed and complete picture of the nature of musical behaviour and how it can be nurtured and developed for all children.

Keywords
musical development, children, complex needs, *Sounds of Intent*

There is an increasing wealth of research emerging from neuroscience and cognitive psychology to suggest that musical behaviour is a characteristic feature of the human condition (*cf* Mithen, 2005; Cross, 2009). Music is also implicated in aspects of our non-musical development. For example, the musical qualities of speech are considered to be critical in early language development and in cementing the bond between infant and mother (Mampe *et* al, 2009; Deutsch, 2010; Trehub *et* al, 2010). Various theories have been proposed as to why music has such significance. One such is related to a perceived dialectic relationship between our biological potential for music and the serendipitous experience of different invented musics by humans within particular cultural contexts (Livingstone & Thompson, 2009; Patel, 2010) – a relationship that also has the power to shape brain structure (e.g., Hyde *et* al, 2009; Schlaug *et al*, 2009). Other, more generic, neuroscientific evidence confirms that 'learning outcomes are not solely determined by the environment. Biological factors play an important role in accounting for differences in learning ability between individuals' (Royal Society, 2011:v). Nevertheless, an underlying characteristic of the brain is its neuroplasticity; that is, its ability to change as a result of experience (known as experience-dependent plasticity) and believed to be present throughout life (Lovden *et al*, 2010).

Given this body of research evidence that (a) musical behaviour is commonplace and that (b) both nurture and nature are needed for learning, it follows that two core tasks for music education are both to (i) understand each individual's current patterns of musical behaviour and (ii) find appropriately differentiated ways to support and extend their musical development. Whilst the aim of music education is for all, the realisation of musical potential in others can be particularly challenging in a context of complex needs; that is, where children and young people have severe learning difficulties (SLD) or profound and multiple learning difficulties (PMLD). Within the English school sector of 8.123m pupils, for example, there are approximately 39,000 children with complex needs (SLD and PMLD, at a ratio of 3:1; DfE, 2011a). Those with complex needs represent 5.6% of the total special needs (SEN) population diagnosed with specific types of disability (701,385) in English schools. School-aged children are defined statutorily as having SEN if they 'have a significantly greater difficulty in learning than the majority of children of their age which calls for additional or different educational provision to be made for them' (DfE, 2011b). In January 2011, under this broad definition, 20.6% (approximately 1.7m) of the school population were identified as having some form of SEN. Yet, until recently, there has been 'scant research on the topic of music learning and children with disabilities' (Jellison, 2006: 270).

Consequently, since the late 1990s, the authors of this paper have been collaborating in an extended research project to improve the quality of learning and teaching of music for children and young people with special needs, particularly those

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with complex needs. An initial mapping of music provision in special schools in England just over a decade ago revealed that, although music education and music therapy were valued, overall provision was patchy, there was no coherent approach evidenced, nor was there any nationally recognised music curriculum guidance available (Welch, Ockelford & Zimmermann, 2001). Most children received music tuition from their own class teacher, but few teachers had received any guidance as to what might be appropriate. All schools made extensive use of music and musical activities within the wider curriculum, but there was little or no obvious connection between these and the formal music curriculum. Also, there was a sense that headteachers thought that development *through* music was more widely valued than development *in* music. These survey findings led to the establishment of the *Sounds of Intent* project, whose aim has been to map the musical development of children and young people with complex needs, whilst also linking this mapping into our understanding of patterns of musical development for the rest of the general child population.

In the opening phase of the project (2005-2007), the research team worked with colleagues from across the special education sector to gather live and video data from case studies of individual children and to use these to explore various ways of modelling musical behaviour and development. A first version of the *Sounds of Intent* (*SoI*) framework was created and this was evaluated formally drawing on 630 observations of 68 pupils with PMLD aged 4 years 7 months to 19 years 1 month from five different special schools (Welch *et al*, 2009). The resultant data analyses were supportive of the general design features of the developmental framework and also the notion that musical behaviour and development are concepts that can be applied in the context of special needs, notwithstanding the severity of the disability. The majority of observations suggested that children with PMLD – the most extreme cases of disability – often demonstrated some sense of personal agency, such as making sound intentionally, and that some children were capable of relatively advanced musical behaviours.

This led to a second main phase of research (2007- to date) that sought to add more detail to the initial *SoI* framework and to expand this to encompass the musical behaviours of children and young people from PMLD to SLD and less severe disabilities, and whose musicality may be highly developed in certain cases (*cf* Ockelford, 2008). An additional 793 observations were made of children and young people exhibiting a wide range of musical behaviours in participant schools. These informed the design and evaluation of a refined model (Figure 1) in which musical behaviours are conceptualised as occurring in eighteen segments across three complementary domains. These domains are *reactive* (responding to music and sound), *proactive* (creating, causing or controlling music and sound) and *interactive* (engaging in some form of musical behaviour and engagement with others). Within each domain, varying levels of musical development encompass six levels of progression, portrayed in Figure 1 from inner to outer segments. In turn, in order to aid assessment, within each level there are four example *elements* that provide details of how the particular behaviour might be evidenced. Subsequent short-term longitudinal studies in London across two school terms (six months) with two different complex needs populations also confirmed the general integrity of the current *SoI* framework design and demonstrated that musical development for this population is possible, particularly in an appropriately nurturing educational environment (Cheng, Ockelford & Welch, 2009; Ockelford *et al*, 2011).

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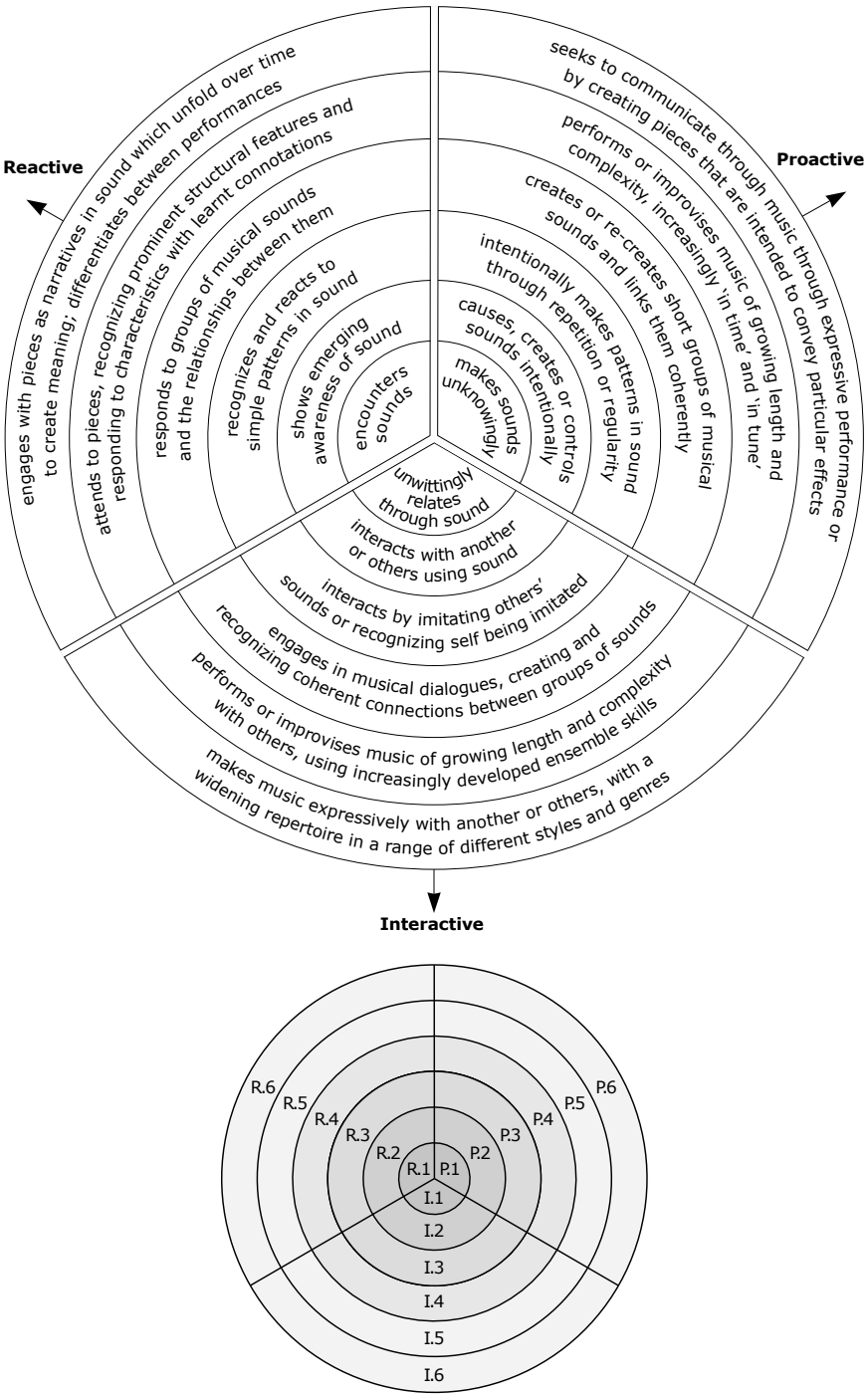

Figure 1. The *Sounds of Intent* framework of musical development

Overall, more than 250 children with various types of disability were observed across these different phases of research, generating over 2000 individual observations that were interrogated against the evolving framework.

Having undertaken extensive fieldwork to evaluate the general conception of the *SoI* framework, the challenge remains as to whether or not this can have a general applicability for teachers (whether specialist music teachers or generalists) who work in a special needs environment, or elsewhere in mainstream schools. Accordingly, the past two years has also seen a further development of the framework by creating special interactive software, designed for *SoI* to be accessible anywhere in the world via

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the internet and able to be used on a variety of modern IT platforms, including mobile phones and tablet computers. Access is via a secure website (http://www.soundsofintent.org/). This research paper reports the first use of this new web resource by teachers in the special education sector.

Method

The new *SoI* instrument is based on an open architecture extensible markup language schema (XML schema) that has been designed specifically for the unique needs of the *SoI* project. The intention has been for the new web-based instrument to be used as a dynamic information retrieval system that can support schools in mapping the musical behaviour and development of their pupils. The website provides detailed information on each of the 72 components of the framework (i.e., three domains, each with six levels of four elements) with textual and video examples of musical behaviour illustrative of the segment. In addition, there is guidance on how to evaluate the behaviour being observed, alongside suggestions of what to do next to promote the individual's musical development. All photographic and video material has been obtained from a variety of vocal, instrumental, group and individual music sessions with SEN children. The captured images represent a diversity of pedagogical strategies and also musical genres. Each image has been provided under a strict ethical protocol that included informed consent from parents or carers.

Over the past two months (September and October, 2011) the website has been open for voluntary participation as a final pilot phase prior to its formal, national launch in February 2012. Members of the project advisory group, drawn from the special school sector, have been using the website with their pupils. Other colleagues have asked to participate having heard about the *SoI* project through their professional networks. Data (password protected) for each pupil is entered by their teacher (practitioner), who is required to be *SoI* registered. Although anonymised (and whilst continuing to be accessible to the individual teacher), summative data are available to the research team to gain specific insights into the musical behaviours of this population.

Participants

By the end of October 2011, n=42 schools had begun to use the *SoI* website to support their music teaching, such as accessing the video content and reading the accompanying textual annotations, and inputting data to create individual profiles of their pupils' musical engagement. Data had been entered for n=172 pupils, aged between 3.3 and 19.8 years, with a mean age of 10.05 years (s.d. 3.38 years), of whom n=120 had sufficiently detailed assessment records to enable the data analyses reported here.

Results

The ratio of participant girls to boys was 1:2 (33% vs 67%), which is generally in line with national SEN data across the school sector (where the older pupils tend to have an even higher incidence of SEN (DfE, 2011[a])). Nationally, with regard to ethnicity, approximately 1:4 of the English school population (all sectors) are from an ethnic minority, with a slightly smaller proportion being formally registered as SEN (21%). However, the *SoI* population in this study are more ethnically diverse, with 61% being from an ethnic minority. This may reflect *SoI* participation from inner city schools with larger ethnic minority populations.

In terms of the type of disability, four overarching disability domains are indicated, as well as some sub-categories for each, with participants often reported as having multiple disabilities (see Table 1). The two largest categories represented by participants were Autistic Spectrum Disorder (ASD) (20.56%) and Profound and Multiple Learning Difficulties (PMLD) (17.26%).

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Table 1. Disability Domains Represented by n=172 Pupils, Many with Multiple Disabilities

	disability domain											
	Autistic Spectrum Disorder	Behaviour, Emotional and Social Difficulty	Hearing Impairment	Moderate Learning Difficulty	Multi-Sensory Impairment	Physical Disability	Profound and Multiple Learning Difficulty	Speech, Language & Communication Needs	Severe Learning Difficulty	Specific Learning Difficulty	Visual Impairment	Grand Total
A. Cognition and Learning Needs				5			68		34	9		116
B. Behaviour, Emotional and Social Development Needs		10										10
C. Communication and Interaction Needs	81							53				134
D. Sensory and/or Physical Needs			4		50	58					22	134
Grand Total	**81**	**10**	**4**	**5**	**50**	**58**	**68**	**53**	**34**	**9**	**22**	**394**
	20.56%	2.54%	1.02%	1.27%	12.69%	14.72%	17.26%	13.45%	8.63%	2.28%	5.58%	

The emergent *SoI* music profiles of these two groups (ASD and PMLD) provide an initial insight into how different types of disability and degrees of musical engagement may be related at a group level (see Figure 2). As might be hypothesised, children and young people with the more extreme forms of global (PMLD) tend as a group to exhibit less advanced musical behaviours (degree of shading in a segment indicates higher incidence of this particular category of musical behaviour). In contrast, ASD categorised pupils demons trate a much wider range of musical behaviours. The differences are approaching significance (Friedman's Two-Way Analysis of Variance by Ranks, $X^2_{(df\ 2)}$ =.083).

Overall, the *SoI* assessments reveal that there is a fairly even spread of data across the first three levels of the Reactive domain and a similar range being evidenced in the Proactive domain; but the Interactive domain is biased towards the lowest two levels (see the graphical representation of the table data in Figure 3).

ASD PMLD

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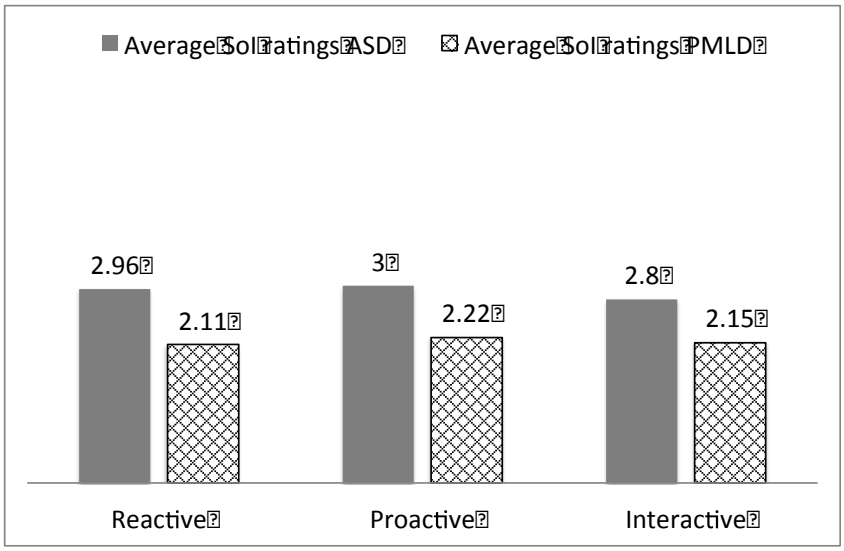

Figure 2. Comparative *SoI* Framework Representations of Musical Behaviours for ASD (n=25 recorded observations) and PMLD (n=64 recorded observations) Pupils

	Proactive Domain	Reactive Domain	Interactive Domain
Level 1	25.0%	26.7%	25.0%
Level 2	23.3%	27.5%	31.7%
Level 3	30.0%	28.3%	19.2%
Level 4	13.3%	11.7%	14.2%
Level 5	6.7%	5.8%	9.2%
Level 6	1.7%	0.0%	0.8%

Figure 3. Graphical Summative Representation of the Biases in the Current *SoI* Data Set for n=120 Assessments

There is no clear evidence of an age effect, not least because of the large numbers of children clustered around the age range of 12-13 years, nor of any sex differences

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(Friedman's Two-Way Analysis of Variance by Ranks, $X^2_{(df\ 5)}$ =.994). An analysis of the distribution of assessment data reveals a wide diversity of musical behaviours. For example, there is a slight trend for some older pupils either to demonstrate advanced musical behaviours, such as P5 _performs or improvises music of growing length and complexity' (R^2 = 0.29), whilst others still have less developed musical skills, such as P2 _causes, creates or controls sounds intentionally' (R^2 = 0.33) (illustrated in Figure 4).

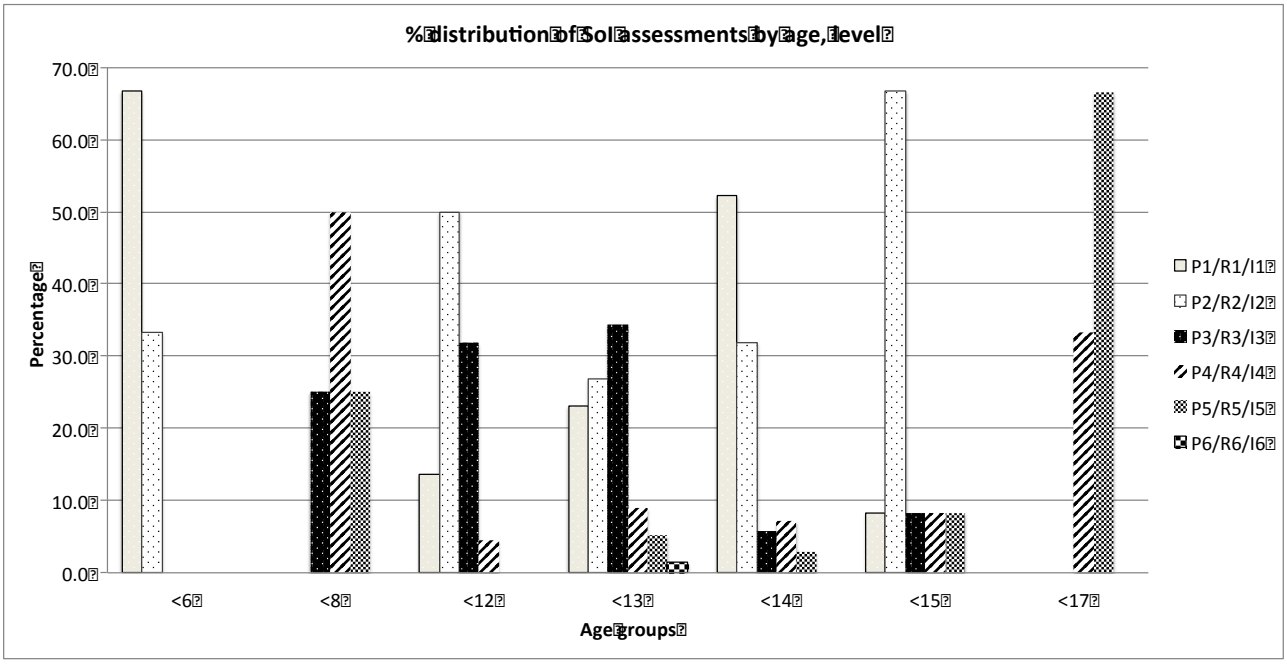

Figure 4. Summation of *SoI* assessments by relative percentage representation in each age group by *SoI* level (data for three *SoI* domains collated)

Conclusion

Existing and present research evidence from a range of linked studies indicates that the *Sounds of Intent* framework, being grounded in case study musical behaviours of individual children, is an appropriate means for tracking musical development in children and young people with complex needs. The latest fieldwork phase suggests that (i) colleagues in the special school sector are able to use the application of the framework in a web-based format (without any need for extensive preparation) to track the musical activity of their individual pupils and that (ii) the website is also a research tool that can be used to collate such data to provide a larger picture of musical behaviour and development for a wide cross-section of the child population. It is hoped that, over time, we will be able to continue to apply this information to have a positive impact on teachers' understanding of how best to understand and nurture the inherent musicality of their pupils.

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research. Thanks are also due to the Esmée Fairbairn Foundation for funding key aspects of different phases of the *Sounds of Intent* project over the past decade.

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