

Music and Dyslexia

Jenny Macmillan



Research

Dyslexia is a broad term covering a wide variety of conditions. There is no universally accepted definition. People with dyslexia may have significant difficulties in reading, writing, spelling, number work, short-term memory, sequencing, auditory perception, visual perception, motor skills and/or spatial skills. The crucial element in diagnosis, as defined by the British Dyslexia Association, is the discrepancy between the intelligence of the child and the child's performance in literacy-related skills.

Many studies claim that music lessons have a positive effect on other areas of academic achievement. However, an equal number have found contradictory or inconclusive results. Strong claims are also being made for music therapy, which is a discipline based on the premise that music-making can have extra-musical benefits. Children with learning difficulties who study music are reported by Katie Overy as showing

Children with dyslexia encounter specific learning difficulties when studying music. However, an examination of the special education literature reveals little published research into music and dyslexia. Jenny Macmillan discusses what is known about the value of multisensory learning, and identifies the benefits of an holistic approach but also the importance of the step-by-step mastery of skills. She examines the difficulties associated with rhythm and timing, and compares notation and language.

cognitive, as well as emotional, development, improving in skills such as co-ordination, language, concentration, attention and memory.

So-called 'deficiencies' in people with learning difficulties are not always related to their having a smaller capacity to handle information; rather, they deploy inefficient strategies to do so. Therefore, research into various areas in which people have specific learning difficulties can help teachers guide pupils towards more effective strategies. Other research suggests that knowledge of how a less able person handles musical material might add to a general understanding of how a more able person handles similar material.

Dyslexia has only recently been accepted as a medical syndrome, but medical research has now shown there are indeed differences between the brains of people with and without dyslexia. According to the Adult Dyslexia Organisation, an estimated 15% of the population have significant dyslexic difficulties. However, Tim

ia

Miles claims that few basic skills are totally impossible for people with dyslexia if they are sufficiently determined and are given, or discover for themselves, the appropriate compensatory strategies.

Problem areas for people with dyslexia

Anecdotal reports suggest children with dyslexia often experience difficulties learning to play a musical instrument. This is not surprising, for they may encounter problems in one or more of the following areas:

- auditory skills
- motor skills
- spatial skills
- visual perception
- timing skills
- short-term memory
- phonological processing
- co-ordination
- concentration
- organisation
- sequencing
- working at speed

People with dyslexia may suffer from:

- erratic behaviour
- low self-esteem
- frustration
- exhaustion
- anxiety
- fear of failure

Additional common problems for those with dyslexia when studying music include:

- learning notation
- sight-reading
- melodic and rhythmic repetition
- maintaining a steady beat

(From British Dyslexia Association and Sheila Oglethorpe)

Publications on music and dyslexia

The two main publications to be recommended to those who are interested in music and dyslexia are *Instrumental Music for Dyslexics: a teaching handbook* by Sheila Oglethorpe, which is full of useful suggestions for teaching children with dyslexia and which she has condensed into an excellent article, 'Helping dyslexic pupils to succeed', and *Music and Dyslexia: opening new doors* by Tim Miles and John Westcombe, which is a fascinating set of case studies. With the addition of four research papers by Leonore Ganschow *et al*, Birgit Jaarsma *et al*, Katie Overy, and Gill Backhouse, these comprise virtually all the literature in the field (see references below for full details).

Multisensory learning

There is agreement in the educational literature – both general and music – that a multisensory approach is beneficial when teaching people with dyslexia. The learner needs to look, listen, touch, attend to hand movements and/or mouth movements, and co-ordinate eye/hand movements. In music, carefully worked out fingering is very important. Strategies such as listening to a new piece while silently practising the fingering, or singing the piece in one's head before playing it are recommended. Margaret Hubicki and Tim Miles suggest that pupils need to be encouraged to 'feel the shape' of the pattern of music so 'its performance will have line and a sense of musical intent'. Music may be memorised through listening to recordings, repetition, and remembering the feel of the piece by the way the hands move.

A large number of associations need to be learned in order to master music notation. Hubicki devised a Colour Staff system in the

1970s before the multisensory teaching of literacy skills was widely known in Britain. Colour is brought in as an aid to the visual recognition of patterns, and movable pieces enable pupils to touch and feel the symbols. More recently she has introduced tangible objects, such as fruits, to represent different notes.

Sheila Oglethorpe suggests that practising an instrument daily, which involves listening, looking and touching, may compensate for dyslexic tendencies. Leonore Ganschow and her colleagues agree: 'Perhaps, if remediation using multisensory techniques is practised early enough, educators can assist musicians with dyslexia to overcome their difficulties'.

Holistic approach versus step-by-step mastery

People with dyslexia are thought to be right-hemisphere dominant. According to Gill Backhouse, 'this hemisphere is primarily an organ of visual/spatial processing and pattern recognition and is the locus of much emotional perception and response'. Fundamental musical abilities are processed here. People with dyslexia can sometimes think three-dimensionally, and they can see potential ideas from all angles. The composer, Nigel Clarke, believes dyslexia gives him a 'helicopter vision', enabling him 'to cut to the heart of an issue'. John Westcombe suggests this can lead people with dyslexia to be extremely creative, discovering new and original solutions to mathematical problems, or showing extreme musical sensitivity by noticing patterns and relationships. Others show strengths in art, architecture or engineering in their ability to view things as 'wholes'.

PM, the professional pianist with dyslexia in Backhouse's case study, 'saw patterns and shapes in music, of which – to her surprise – other musicians seemed largely unaware. She talks in highly graphic terms about having a clear picture of each composition – perceived as a journey through a three-dimensional landscape of structures, milestones, landmarks and colours. She finds working on right and left hands separately and slowly is fatal – the picture is fragmented'.

I suspect that people with dyslexia work in a variety of different ways. My own experience with pupils with dyslexia is that they can easily be overwhelmed by too large a task and need to be set small manageable tasks; and that if anything is learned wrongly, such as fingerings, articulation or rhythm, it is almost impossible to correct it later. In other words, some people with dyslexia have to work very slowly and carefully, mastering one step at a time.

PM's holistic approach to learning new pieces is first to focus on the architectural qualities; second to perceive the piece as a whole, learning it 'top-down'; and third to listen to recordings of the piece to get the whole picture. Apparently PM initially feared that listening to a recording would affect her own interpretation of the piece. But once she realised the importance to her of getting the whole picture first, she was happy to listen to recordings. Indeed, all five subjects with dyslexia described by Leonore Ganschow indicate that they learn and memorise through listening to recordings of the music.

These five subjects all report difficulties with notation. They compensate by approaching a piece of music holistically, as well as multisensorily. They describe a musical line in terms of 'feeling it', or 'visualising ... coloured images', and learn by first getting a 'global impression' of a new piece. One subject was unable to repeat a sequence of notes backwards for she seemed to deal with the notes as a block rather than individually. Compensations for people with dyslexia in reading language often are also holistic; they infer the general idea or gist from a passage, rather than reading each word.

Study of rhythm and timing

Several current theories show that a cause of dyslexia may be neurological timing problems or 'temporal processing' problems. These cause difficulties with auditory and motor skills which in turn lead to language and literacy difficulties. Evidence published by Katie Overy indicates that the development of temporal processing skills through music training may improve the literacy skills of children with dyslexia.

Overy has developed a set of musical aptitude tests to identify the particular areas in which children with dyslexia have difficulty with music. Her results indicated that 6- and 7-year-old children with a 'strong risk' of dyslexia were significantly worse at tempo perception, metre production, rapid rhythm temporal processing, rhythm perception and, most significantly, at rhythm production (a particular problem area for children with dyslexia). Results over the three-month training period showed significant improvements in phonological skills. Spelling standards also improved.

Proposed further work by Overy involves the design of a music training programme for use with groups of children with dyslexia. Basic timing skills will be developed through clapping and percussion games. Singing games will be combined with motor and visual activities as multisensory training is acknowledged to be beneficial for children with dyslexia.

Singing can help children with dyslexia learn the alphabet and arithmetical tables. It seems true in general that the rhythms of music can aid memorisation. Rhythms themselves are easiest to learn by hearing them because of the problem of counting and playing simultaneously. Sight-reading books by Paul Harris separate the issues of rhythm and melody, which is important for children with dyslexia (and other children) who can easily become overloaded. The Kodály method incorporates singing, marching, clapping and other movements to develop pupils' rhythmic capabilities. In Dalcroze Eurhythmics, students are asked to move and feel the different musical elements with their whole bodies.

Notation and language

The problems with the representation of time, rhythm and sequencing in music can be compared with the difficulties some people with dyslexia have with identifying and representing phonological units of language. Both the alphabet and musical notation are based largely on arbitrary conventions and associations. As Miles and Westcombe explain, 'A central characteristic of musical notation is that it conveys a large amount of information within a small space'. Problems for those with dyslexia when reading notation, says Westcombe, include poor eye-ear-hand co-ordination, slowness in processing symbolic information, and delay in actions becoming automatic.

Children with dyslexia may have specific problems with music notation because of the excessive visual material and confusing formats. Birgit Lauridsen, a Danish piano teacher who has investigated using off-staff notation, traditional notation and no notation, recommends the use of effective off-staff notation which should have 'the least amount of content that needs explanation and the highest amount of immediately understandable and precise information'. Musicians with dyslexia often choose to annotate their score with their own colourful signs, symbols and pictures.

In an experimental study into learning music notation, Birgit Jaarsma seems surprised that, 'the most frequent and intriguing transposition, in both groups of children with and without dyslexia was b1/d1 [a misreading of treble clef B third line for D fourth line] (or vice versa)'. This is the common b/d confusion experienced by children with dyslexia, and it shows that the confusion may also be experienced by those without dyslexia – or perhaps that many people suffer 'dyslexic traits'.

When reading music, children with dyslexia need more time and make more mistakes than children without. They are particularly

prone to confusing notes on adjacent lines or adjacent spaces (third transpositions) while those without dyslexia tend to confuse a note with one immediately above or below it (second transpositions). Jaarsma says that 'these findings suggest that dyslexic children are less sensitive to the crucial position of the notes on the lines'. In my experience people with dyslexia can get confused when looking at five parallel lines (the grand staff). The notes 'swim'. They may be able to see whether the note is on a line or in a space, but cannot quickly work out *which* line or space.

Jaarsma's programme was specifically designed to cultivate the ability to 'read music', ie to give the name of a particular note. Another solution is to put less emphasis on identifying the notes and concentrate more on actually playing them, 'Learning to read musical notation would then be integrated in its application to the playing of an instrument'. This holistic approach may be more appropriate for musicians with dyslexia.

Benefits of the Suzuki approach

In developing his instrumental teaching method, Shinichi Suzuki claimed that his 'mother-tongue' approach to teaching children was effective for *all* children unless severely brain-damaged or disabled. As Carole Bigler and Valery Lloyd-Watts put it, 'There are no failures. Any child who can speak his native language has the potential to learn to play the piano'. Interestingly, the Suzuki approach does seem to address many of the problems identified in the research literature for young musicians with dyslexia.

Educational researchers have identified that teaching programmes for those with dyslexia need to be '*structured, sequential, cumulative, and thorough*', as well as *multisensory*. The British Dyslexia Association emphasises the need to build new information on existing knowledge, while Westcombe stresses the importance of providing plenty of opportunities to revise previous work. The Suzuki programme is highly *structured*, with pupils progressing *sequentially* through a set repertoire of pieces which gradually introduce various musical and technical skills. The method is *cumulative* as pupils maintain their past repertoire, developing their skills on these now well-known pieces. The approach is *thorough* as pupils are required to master every musical and technical point in one piece before progressing to the next.

Suzuki pupils learn using *aural, visual* and *kinaesthetic senses*. They listen to recordings of their pieces, observe other pupils' lessons, and watch their teacher demonstrate. Because of the emphasis on technique from the very first lesson, they learn to be aware of every movement

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at their instrument; because of the emphasis on musicianship, they learn to listen carefully to the sounds they are making. Other features of the Suzuki approach which could help young musicians with dyslexia are group lessons as well as individual lessons, repetition of assignments, and initially playing by ear although learning notation from the earliest stage.

Children with dyslexia can suffer from low self-confidence. The fact that Suzuki children receive enormous parental support, especially in the early stages, means that they can start their lessons very young, often at the age of 3 or 4. While children with dyslexia may be behind their peers in some aspects of their learning, they may well be in advance of non-Suzuki children in their music-making, and this helps build their self-esteem.

Dyslexic positives

Sheila Oglethorpe identifies many positive aspects of dyslexia. She notes that people with dyslexia can be very resourceful, determined, hard-working, ingenious, inventive and creative. She suggests that musicians, artists and craftsmen with dyslexia are often outstandingly good at their art – they seem to have an affinity with it which those without dyslexia may never achieve, however hard they try.

Tim Miles and John Westcombe say that ‘Can music be a *cure* for dyslexia?’ is not a relevant question. There are advantages, as well as disadvantages, for people with dyslexia, and no-one would wish to ‘cure’ the advantages. It is more appropriate to think in terms of providing those with dyslexia with appropriate strategies to minimise its adverse effects. As Gill Backhouse reports of the pianist she studied, ‘PM feels she has gained considerably from understanding her learning style. Forced by her learning difficulty to focus on music at a level *beyond the notes*, she brings an intense musicality to her concert performances, which critics have responded to, praising the “tonal colours and structural qualities” of her playing.’

Further research

Dyslexia occurs in widely varying degrees of severity, and it is difficult to be sure to what extent a constitutionally caused weakness can be compensated for by a favourable environment. Obviously people can and do develop compensating strategies to overcome or circumvent their dyslexic tendencies. From my own experience, remedial training in literacy and numeracy can help. Can musical training also help? Overy concludes that musical training could be beneficial to all children, not just those with dyslexia, when learning to read. What

sort of musical training is required? Individual lessons on a particular instrument, or singing; or group musicianship lessons? Rhythm work seems particularly important. What is the best way for musicians with dyslexia to organise their practice? How and when should reading music be introduced? Very few problem areas for musicians with dyslexia have been examined. Much remains to be investigated.

Conclusion

People with dyslexia may have the same capacity to handle information as those without dyslexia, but they often use less efficient strategies to do so. It is therefore especially important for their teachers to be aware of each student’s particular strengths and weaknesses, and to be flexible in their approach. Teaching programmes need to be structured, sequential, cumulative, thorough and multi-sensory. Teachers should experiment with holistic versus step-by-step mastery with each student. Children with dyslexia may well have problems with rhythm and timing – these issues should be tackled carefully and sympathetically. Learning to read music poses similar problems to learning to read language – different approaches need to be tried (for example, multisensory, holistic/step-by-step) to discover what best suits each student, linking with any successful strategy used by the child for reading language.

Many of these issues seem to be addressed by the Suzuki approach. What is most important is for teachers to be as flexible as possible when teaching students with dyslexia – if one method does not work, another may be successful. At the same time, *all* students will benefit from the use of the most flexible and effective teaching strategies, which teach to pupils’ strengths and encourage them to analyse their own learning style.

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