

The role of psychology in music education

Susan Hallam on the nature and importance of musical ability

Music psychology has a long history dating back to the end of the 19th century. It is a distinctive strand of psychology that has grown in strength over the years with researchers in the UK leading the field. Much of the research has been of interest and relevance to music education and covers a wide variety of musical engagement. This article focus on research relating to three aspects – musical ability, the development of expertise in music and the wider benefits of musical activity.

questions

Why is it important that educators conceptualise learning with an expertise paradigm?

What is distinctive about music psychology that has made it more successful in its impact on education than other strands of psychology relating to the arts?

resources

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Historically, as in education more generally, psychology played a major role in music education through the development of psychometric tests to assess musical ability. Testing began in 1883 when Carl Stumpf suggested a number of simple aural tests that music teachers might undertake to select pupils. Subsequently, a range of assessments has been developed that can be administered to groups of children of different ages and adults (for a review see Hallam, 2006a).

In the UK nowadays, such tests are rarely used. This is, in part, because it has been accepted that every child should have the opportunity to learn an instrument and actively engage in music making. In addition, research has demonstrated that a wide range of factors contribute towards the development of musical skill and that test performance improves with increased engagement in music making (see McPherson & Hallam, 2009).

The evidence from neuroscientific studies of musical processing has demonstrated that the brain develops in very specific ways in response to particular learning activities, and that the extent of change depends on the length of time engaged with learning. The substrates of processing reflect the auditory 'learning biography' of each individual (Altenmuller, 2003), which in turn reflects the available musical opportunities and influences within the prevailing culture.

These findings support the growing consensus that learning in music is best understood in relation to the 'expertise' paradigm (Ericsson et al., 1993). Early

exposure to music, through processes occurring without conscious awareness, enables the development of aural schemata for music. These provide the basis for subsequent musical skill development when the individual begins to actively engage in making music. Progress from this point depends on the amount of time spent in the activity and the quality of that engagement (see Jorgensen & Hallam, 2009, for a review). In addition to undertaking individual 'deliberate' practice (Ericsson et al., 1993), the learner may also rehearse and perform with others where technical and musical skills can also develop and be consolidated (Kokotsaki & Hallam, 2007).

To summarise, the quantity and quality of learning experiences, formal and informal, contribute to the level of expertise attained and also the quality of that expertise. The evidence suggests that these principles apply across a wide range of musical endeavours, including improvisation, composition and performance. It is likely that they also apply cross-culturally, but to date most of the research has focused on Western music (Hallam, in press-b; Hallam et al., 2009).

What is musical ability?

Developments in our understanding of the way that music expertise is acquired seem to be reflected in perceptions of musical ability in the wider community. Hallam and Prince (2003) explored the conceptions of musical ability held by a cross-section of the population, including adults and children, musicians and non-musicians, asking them to complete the phrase 'Musical ability is...' Six categories emerged from the analysis: aural skills, receptive responses to music; generative activities, the integration of a range of skills, personal qualities and the extent to which musical ability was perceived as being learned or inherited. A follow-up study, based on responses to rating scales derived from the qualitative research, indicated that musical ability was most strongly conceptualised in relation to

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rhythmic ability, organisation of sound, communication, motivation, personal characteristics, integration of a range of complex skills and performing in a group. Having a musical ear came lower in the list than might have been expected, given its prominent position with regard to musical ability historically. Musical appreciation, knowledge and being able to read music or compose came further towards the bottom of the list. The importance attached to rhythm and musical communication may reflect their roles in much popular music, while the high ratings given to motivation and personal characteristics suggest that the role of effort and determination to succeed are generally recognised (Hallam, in press-a).

Taking it into schools

Acknowledgement of the effort required to reach high levels of musical expertise, and concerns about low take-up of music options in schools and the relatively high drop-out of children from instrumental lessons (even when there is evidence of their engagement with music outside

school) has led to research focused on motivation and the development of musical identity (for reviews see MacDonald et al., 2002; O'Neill & McPherson 2002; Hallam, 2009b). Music educators have also explored ways of utilising informal teaching methods in the classroom, drawing on pupils' musical interests – usually popular music – to generate and sustain pupils' interest (see Green, 2008; Hallam & Creech, 2008).

The fact that young people have plenty of opportunities to engage in music *outside* school has put pressure on educators to justify the role of music in the curriculum. The findings from psychological research have provided evidence for the wider benefits of music education, although some research exploring the effects of music on general intellectual skills has been controversial. The claims that listening to Mozart could improve spatial reasoning (Rauscher et al., 1995) have proved difficult to replicate (Chabris, 1999; Hetland, 2000a), but findings relating to the benefits of active music-making have been more promising. A meta-analysis of experimental studies examining the effects of music lessons on spatio-temporal and

other abilities, including 15 studies involving over 700 children aged three to 12 years undergoing music lessons in programs ranging from four weeks to two years, reported a mean effect size of $r = .29$ for published studies and $r = .44$ for unpublished studies. Active music lessons appear to enhance spatio-temporal performance in children concurrent with instruction and for at least two years after. The benefits occur with any style of

instruction, although individual lessons produce a somewhat larger effect than group lessons and the effects are more likely with younger children (three to five years), and when standard musical notation is taught (Hetland, 2000b). In a more recent study, Schellenberg (2004) randomly assigned a large sample of children to four different groups, two of which received music lessons for a year. The other two were control groups that received instruction in a non-musical artistic activity (drama) or no lessons. All four groups exhibited increases in IQ over the time period, as would be expected, but the music groups had reliably larger increases in full-scale IQ with an effect size of .35. Children in the control groups had average increases of 4.3 points while the music groups had increases of 7 points. Schellenberg suggests that these effects may occur because music instruction requires individual practice, attention and concentration, which may lead to greater transfer of learning strategies and motivation.

Those working in music psychology have also attempted to disseminate their findings in books that can be easily accessed by educators (see resources, opposite) as most teachers do not read academic journals of any kind. While psychological research has had a major positive influence on and for music education, there is still some way to go in finding ways to engage with people teaching music in a wide range of environments, both to communicate research findings and also to set up a dialogue with them to establish how future psychological research could support their work.



I Susan Hallam
is Dean of Faculty of Policy and Society and Professor of Psychology at the Institute of Education, University of London
S.Hallam@ioe.ac.uk

Findings from psychological research have provided evidence for the wider benefits of music education

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