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Musical 'learning styles' and 'learning strategies' in the instrumental lesson: some emergent findings from a pilot study

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Introduction

There have been numerous discussions of the concepts of 'cognitive style', 'learning style', 'learning strategy' and related areas in the psychological literature on learning since the 1940s.[1] This article will briefly review aspects of this large literature, then present and discuss some potentially relevant findings concerning a particular approach to instrumental music teaching and learning. The findings emerged from a qualitative, practice-based research-and-development pilot study which implemented and evaluated a pedagogic method derived from popular musicians' informal, especially aural, learning practices.[2] The study follows on directly from research conducted and discussed in Green (2001/2, 2008) and within the UK 'Musical Futures' project.[3] Whereas the earlier research was based in school classrooms, the study under current consideration implemented and evaluated certain aspects of the approach within instrumental tuition taking place on a mainly one-to-one basis.

The fundamental philosophical and educational rationale for the study, the detailed nature of the pedagogic strategies and materials used, the role of the researcher and the teacher, the research methods, and the main findings concerning students' and teachers' responses are directly comparable with those discussed in the earlier, classroom-based work referred to above. They contain many differences as well as similarities, since they were adapted in various ways to the context of instrumental tuition. One important difference, which relates both to the research strategies and the findings, concerns the level of individual detail that I was able to go into. Rather than observing classes of up to 30 pupils at a time, the current study enabled me to observe each student's progress on a one-to-one, (or in one case, one-to-two), week-by-week basis. It is possibly partly owing to this level of detail that the findings to be discussed in the

current article, which did not emerge in the classroom study, became apparent. However, other than that, general aspects of the approach as documented in the above literature, their adaptation to the instrumental setting, and comparisons of the two projects, are not the focus of the present article. Rather, the present article addresses the areas of cognitive style, learning style and learning strategy in relation to some particular issues that arose during the project. These issues concern findings that emerged from the data, and were unsought and unexpected. They, and the theory resulting from them, are thus understandable as constituting a type of 'grounded theory' approach (see e.g. Glaser and Strauss 1968).

Although I class myself as a sociologist of music and music education, I have sought to publish this article in a psychology of music journal. The reason for this is that the project's findings lead me to formulate certain concepts and ideas which happen to relate to a particular area within the psychological literature, rather more than to the sociological literature. It is in such – hopefully positive – ways that the boundaries around our respective disciplines are perhaps beginning to break down in the multidisciplinary intellectual climate of our times.

As mentioned, this study was a pilot. A larger-scale main-study project is due to start in the 2011-12 academic year,[4] and this will provide an opportunity to examine many of the claims in a broader context. Although small-scale, the findings discussed here have elicited some enthusiastic interest in forums where they have been presented,[5] as well as amongst the teachers and pupils involved, and I have received queries about whether they are to be published. As it will be some time before the main study is completed, this article is presented as work-in-progress, in the hope that the findings may have some initial value as a way of making links between instrumental music-learning and the field of psychological research in cognitive style, and possibly in generating some ideas for further research.

The 'style' construct

Many different theories concern what has become known as 'cognitive style'. They date back to the late 1930s, when the psychologist Gordon W. Allport used the term 'styles of life' in relation to his work on personality.[6] This spawned the notion of 'cognitive style', which has been investigated by large numbers of psychologists throughout the 20th century and to date. Many assessment tools have been devised, ranging from self-report questionnaires to tests and

observations of learners' behaviour in controlled situations. In the first few decades of this work, as described by Riding and Raynor:

> Generally the researchers worked in their own contexts, in isolation from one another, developed their own instruments for assessment and gave their own labels to the styles they were studying with little reference to the work of others. Not surprisingly, this led to the development of a large and confusing variety of style labels. (Riding and Raynor 1998: 8)

Indeed, the amount of different theories, labels, models and instruments that have been developed is exceptionally large. For example, Coffield et al (2004: 2) mention that over 2,000 articles were written between 1985 and 1995 concerning one instrument only (the Myers-Briggs Type Indicator, which originated in the 1940s).

A number of workers during the 1980s and 90s attempted to make sense of this plethora by putting forward a more limited number of meta-theories and models which contain cognate groupings of others. Most of the models involve 'dimensions', or the idea that the cognitive style of an individual can usefully be located somewhere along one or more poles. Some of the most-discussed dimensions are those of field-independence/field-dependence, impulsivity/reflectivity, wholist/analytic, holist/serialist, focussed/detailed, verbal/imagery, convergence/divergence, adaption/innovation; and there are many more. There seems to be broad agreement that the concept of 'cognitive style' can be grouped along with other similar terms, including 'thinking style', 'intellectual style', and in some cases 'learning style'.

Although there are subtle differences between and amongst such concepts, in general most authors would agree that the 'style' construct refers, or should refer, to an individual's spontaneous or preferred approach to learning; an approach which is independent from other factors such as intelligence, personality, gender, culture, and to a large extent, motivation or learning situation; and which remains constant, or relatively constant, in a fundamental way throughout the individual's life. As expressed by Riding and Raynor (1998: 6), in this conception, it is impossible 'for a person to "switch off" their style'. In other words, we could describe 'style' as being a somewhat 'hard-wired' or 'in-built' tendency to approach learning in a particular way.

'Learning strategy'

The 'style' construct and its related concepts are distinguishable from other concepts about learning, which concern not 'style' in the above sense, but factors such as 'strategy', 'approach', 'process', or 'orientation' to learning, and other similar notions. Although there is naturally overlap and difference of opinion amongst authors, in general it seems safe to suggest that, rather than being seen as 'hard-wired' in the way that 'style' is, these latter constructs refer to learnt behaviours that are acquired through experience, and are able to change and develop as time goes by. As Schmeck (1988b) explains:

> The term *strategy* was originally a military term that referred to procedures for implementing the plan of a large-scale military operation. The more specific steps in implementation of the plan were called *tactics*. More generally, the term *strategy* has come to refer to the implementation of a set of procedures (tactics) for accomplishing something. Thus, a *learning strategy* is a sequence of procedures for accomplishing learning, and the specific procedures within this sequence are called *learning tactics*. (Schmeck 1988c: 5, referring to an unpublished paper by Snowman)

He also asserts that strategies and tactics are conscious and intentional, and that they involve plans, which in turn can be linked to motives (p. 6).

Weinstein (1988) offers some illustrations of the kinds of activities that learning strategies might involve:

> Learning strategies are considered to be any behaviors or thoughts that facilitate encoding in such a way that knowledge integration and retrieval are enhanced. More specifically, these thoughts and behaviors constitute organized plans of action designed to achieve a goal.... Examples of learning strategies include actively rehearsing, summarizing, paraphrasing, imaging, elaboration, and outlining. (Weinstein 1988: 291)

The concept of 'strategies' needs to be aligned with, but distinguished from, that of 'skills', although making a distinction between the two is not always straightforward. Kirby (1988) explains the distinction thus:

> …skills are existing cognitive routines for performing specified tasks, and strategies are the means of selecting, combining, or redesigning those cognitive routines. (Kirby, 1988: 230)

As Schmeck reminds us, (1988: 17), a learner’s failure to carry out an activity does not necessarily mean they lack the skill to do so – it could be that the learner does not want to carry out the task, or is afraid to do so, or thinks the teacher is looking for a certain response and thus holds back from giving a different response, and so on.

‘Style’ and ‘strategy’ as used in the current article

Riding and Raynor (1998) imply a tripartite hierarchy of the main concepts involved in the above debate. This involves viewing ‘cognitive style’ as the most general, in-built trait; ‘learning strategy’ at the opposite end, as a set of acquired, conscious choices to aid learning; and ‘learning style’ as something in-between. However they themselves acknowledge overlap between the constructs (p. 80), and in this article (apart from inside citations) I will use two of the terms only: ‘learning style’ and ‘learning strategy’, with ‘style’ and ‘strategy’ being defined broadly in the senses as discussed above. Whether the findings that have emerged from this study could reasonably be referred to as evidence of ‘cognitive styles’ as being in some way distinct from ‘learning styles’, is not a level of detail that I propose to enter. What seems clear, as I hope to show, is that the findings suggest the presence of something that is ‘style-like’, and that appears to be distinguishable from other factors that seem ‘strategic’. It thus seems sensible to refer to the former provisionally as ‘learning styles’ and the latter as ‘learning strategies’.

In sum, this article will refer to ‘learning style’ as a relatively ‘hard-wired’, in-built, or un-changing tendency or trait in the individual, which comes into play spontaneously when the individual is learning, or attempting to learn. It will refer to ‘learning strategy’ as an approach which arises as a result of prior experience and/or conscious choice, and which is susceptible to environmental influences, adaptation and development. So a learner who has a particular learning style could adopt a number of different learning strategies over time; and indeed, given that some learners may spontaneously adopt learning styles that contain more effective – or

strategic – approaches, therefore what for one learner might start as a 'style', could for another learner gradually become a 'strategy'.

The position of music in the literature on style and strategy

Within the literature on cognitive style, there appears to be little or no work focusing in detail on music-learning. Howard Gardner (1983, 1999) famously distinguished between 'musical intelligence' and other types of intelligence, and he and many others following on from this work occasionally refer to musical intelligence as a 'learning style'. But there is little detailed research making a distinction between different styles of music-learning *within* musical intelligence. There are theories of music-learning and musical development which arise from Piagetian notions of learning 'stages', as distinct from 'styles' or 'strategies', (e.g. Swanwick and Tillman 1986); theories of music-learning as a sequential phenomenon (e.g. Gordon 2007); in-depth studies of young children acquiring a range of musical skills, including 'thinking skills' (e.g. Barrett 1997), and compositional/improvisational skills (e.g. Burnard 2000); and theories of how children's self-identities or self-efficacy concepts interrelate with their musical skills (e.g. O'Neill 2002). Such theories contain many possible links with the 'style' concept, but they tend not to invoke this term or make connections with the particular literature discussed above.

Most 'style' theories themselves attend to how individuals habitually assimilate, organize and represent mental processes that involve information, knowledge or understanding. Generally the term 'skills' is used with reference to 'cognitive skills' or 'thinking skills'. A certain amount of work has been done on the identification and analysis of visually-based tasks (e.g. Kagan et al 1964), and there is work on learners' active responses (such as Grigerenko and Sternberg, 1995, cited in Riding and Raynor 1998: 50). But there seems to have been little or no examination of style in relation to non-verbal psycho-motor skills such as those involved in learning to play a musical instrument. Most particularly, I have found no work which considers the learning processes of students when attempting to adopt the kinds of strategies that will be the focus of the present article – that is, auditory copying.

The research sample

The project involved 15 students, mostly aged 13 to 15, with one 10 year-old and one 17 year-old. One student took part in an informal pre-pilot study; the other 14 took part in the pilot study proper. There were 6 boys and 9 girls. Ten of them were white, 4 Asian, and 1 mixed-race. Two had statements of special educational needs. The students had been learning their instruments for varying periods of time, from 8 months to 12 years. Most of them were around the Grade 2 standard, with the most advanced student being at Grade 6 (using a well-known grading system in the UK).[7] All but the youngest one was attending the same comprehensive school in London; and the youngest one was attending the neighbouring primary school. Between them they played the piano, clarinet, saxophone, trumpet, euphonium, trombone, violin and cello. The students were recruited through their instrumental teachers, who were asked to select students of varying levels and abilities. However, the intricacies of timetabling meant that in practice the selection of students was relatively random in respect of ability or level.

The teachers comprised four women who between them taught piano, woodwind, brass and strings respectively. They were all classically trained, although the woodwind teacher's training veered more towards 'light music'. The piano teacher worked in a private studio at her home, and the other three worked peripatetically in the school. Because I had to make a number of visits to lessons, the private studio and the school were chosen near to where I live. I contacted the piano teacher as she was a well-known teacher in my locality; and I contacted the peripatetic teachers through the Music Department of the school.

Most students had 6 to 8 lessons within the project, each lasting 10-15 minutes, once a week.[8] Altogether 104 project lessons took place. Most of the students followed three different project-stages, but in three cases one stage only was taken owing to illness or otherwise lack of time. All the lessons were individual, apart from the case of two students, (William and Evie), who took their lesson together. All names of pupils have been changed here, retaining the sex and the national, ethnic, religious or cultural affiliations associated with different names as far as possible.

Research methodology and methods

The research methods were qualitative and ethnographic. Data-collection involved participant-observation and audio-recording of all 104 lessons. As participant-observer I took the role of both researcher and teacher. The reason for this was so that I could test the pedagogic strategies and materials first-hand. To this extent, a phenomenological research approach (see e.g. Brewer 2000, Cressell 2007) was invoked, as I put myself into the role of teacher, and experienced the strategies from a teacher's point of view. Meanwhile, the normal instrumental teacher acted as a critical observer and co-teacher. As critical observers the teachers added triangulation to the data. Their observations, perspectives and opinions were a vital part of the project, being collected as part of the field-work whilst the project unfolded, as well as through post-intervention semi-structured interviews and group discussions. As co-teachers they took an active part in the lessons and were able to 'get a feel' for how the strategies were panning out. Whilst I was the main teacher, if they felt they had a suggestion to make concerning a particular point, they were free to make it; and sometimes I had to ask them for help, such as how to play a B-flat, if the instrument being learnt was one that I do not play myself.

I refrained from the use of a video-recorder for various reasons. One was that I wanted to adopt a similar research approach to that in the classroom project for the purposes of future comparison, and this did not involve video. Another was that I collected data ethnographically, in ways that are not always pertinent to the use of video-recordings. (For a helpful discussion of research methods in ethnomusicology particularly relating to the use of video-recordings see Stock 2004; many of the issues discussed are equally relevant for the type of sociological enquiry under current consideration.) Rather, each lesson was audio-recorded – an audio-recorder tending to be a less intrusive instrument than a video-recorder – then transcribed and annotated. The transcriptions and annotations were combined with any field-notes that I had made straight after each lesson, as well as observations of gestures, facial expressions or other factors taken from memory; such data being considered valid in qualitative research of this kind.

At the start of the project, I collected information about the students and teachers through questionnaires to parents and teachers, and through a teacher-meeting. At the end of the project I conducted individual semi-structured interviews with the students and teachers; a questionnaire with the students; and recorded and transcribed an end-of-project teacher meeting in which I presented and discussed the initial findings with three of the four teachers; (the piano teacher had moved away but I discussed the findings with her informally).

As mentioned earlier, the assessment tools used by most studies of cognitive style range from self-report questionnaires and inventories, to direct observation of learners' responses in

controlled situations. Schmeck's anthology (1988a) also includes a number of studies that adopted a more phenomenological approach, in which learners were asked for their views of what learning means to them, or other related issues. This approach recognizes the effects that such assumptions are liable to have upon learning styles and strategies. As Schmeck explains in his own chapter within the anthology:

> Perception involves an act of classification, for example, this is 'a test' or 'a recital', or 'a debate.' The person classifies the situation, then behaves in ways that he or she has learned to be appropriate in that type of situation. When a particular motive is very dominant, a single perceptual category may excessively influence perception. In such cases, the person's behavior will be more stylized…. The point that phenomenologists emphasize is that it's the student's perception that starts the whole thing. (Schmeck 1988c, pp. 12-13)

The approach taken by the present study falls somewhere in-between the participant-observational and the phenomenological. The research context was not 'controlled' in such a way as to aid the elicitation of data relating to learning styles. This was partly because as already mentioned, I had no idea that any data potentially relating to such a notion would emerge; and also because the aim of the research was to develop, implement and evaluate pedagogical methods in a setting as close to a 'real' teaching context as possible. Although the participants' perspectives were a vital part of the study overall, they play a lesser role in relation to the focus of the current article than to other aspects of the project.

There are many well-known disadvantages to such research methods, including particularly, the possible presence of a 'halo' effect, and researcher-bias. The pupils and teachers may not have behaved in the same ways as they would, had a researcher not been present; and the researcher may have found findings that she subconsciously wanted to find, and failed to notice others that might challenge her pre-conceived ideas. In relation to the first of these objections, the fact that the teachers and pupils may have behaved differently had the researcher not been present is already given, since if the researcher had not been present the pupils and teachers would not have been undertaking the activities at all. This disadvantage is therefore an unavoidable consequence of any practice-based approach that aims to implement and evaluate new pedagogy through ethnographic research. In the main study, one of the first aims will be to train the teachers, based on this pilot, in such a way that they can deliver the strategies without a

researcher being present. However even then, to the extent that rich data are required, the researcher will still act as an observer in a portion of the lessons; and even if the researcher is not present, the teachers and pupils will know they are part of a research study, and so the 'halo' effect could still come into operation. This is an unavoidable consequence of much research involving human subjects. Overall, the presence of the researcher does affect, but does not invalidate the findings. As for researcher-bias, this is again an unavoidable danger which all qualitative researchers seek to reduce in a range of ways. These include triangulating their data, asking participants to be involved in data-analysis, double-checking the coding of data, and simply attempting to be as thorough and objective as is humanly possible, all of which strategies were undertaken in the present study.

Equally, there are many advantages to research of this kind, such as the opportunity to make detailed observations from an insider-perspective, and to elicit the views of participants through close contact as well as interview and questionnaire.

The project's pedagogic strategies

The strategies were organized in three stages. Each stage lasted around 3 lessons for 10 to 15 minutes, or half the student's normal lesson period, once a week. (For the remainder of the lesson, the student and teacher carried on with their normal work, I was not present, and this was not a part of the study.) In the first lesson, for three of the pupils I used a classical melody, but from the second lesson onwards for those pupils, and for the other 11 pupils from the start, I used a specially-composed pop/funk instrumental piece, called 'Link Up'. (Although the pieces of music therefore were different during the first lesson for three students, it is the learning style or strategy that I am interested in here, which were not observably affected by the particular piece of music being played.) Following the pattern used in a part of the classroom work (Green 2008, pp. 25-6), each student first listened to the opening of the full track, then to the opening of a track in which the bass riff (shown in Example A) is played on its own with drum backing, repeated over and over for two minutes. The pupils were then asked to attempt to find the pitches of the riff on their instrument, transposed up or down an octave as appropriate. I and the teacher gave plenty of time for the student to attempt the task, and avoided jumping in to tell them a note-name or show them where to put their fingers. As time went on, we offered encouragement and

help in a variety of ways, some of which will be illustrated later, but at this stage, we largely encouraged the learners to work out the notes for themselves.

Once the riff had been learnt, two to five more riffs were learnt in the same way. These are also shown in Example A. As a part of this task, the students played along to the recording, using any of the riffs they had learnt, and as they became more proficient, they were encouraged to make up their 'own' piece by playing the riffs in any order and combination that they liked, sometimes with the recording, and sometimes in a duet with the teacher. For pianists this meant playing with two hands, and playing two-note or in some cases, three-note chords in the right hand.

PLEASE INSERT EXAMPLE A ABOUT HERE

Stage 2 involved the same task, only the students were given a choice of six pieces of classical music, each one presented whole, and then broken down into separate tracks involving melody and bass-line, repeated in phrases of around four to eight bars each for two minutes, as with the 'Link Up' piece. (Again this follows the format of the audio recordings used in Green 2008, see pp. 151-2.) The pieces were:

Mozart, *Eine Kleine Nachtmusik*, opening
Beethoven, *Für Elise*, opening
Clara Schumann's piano trio, opening
Handel flute sonata, Op. 1, no. 5, minuet
Brahms' symphony no. 1, theme from movement iv
Bach minuet in G minor, from the *Anna Magdalena Notebook*

In Stage 3 the students chose their own music to copy. They brought their chosen piece to the lesson as a commercial recording on a CD or in mp3 format, so the piece was not broken down into parts, but approached whole.

None of the students had previously attempted to find pitches by ear from a recording during a lesson; and before the project started only four of them had been sure that music could be learnt entirely by ear. Another four had never attempted to play by ear in any way. Ten of them had tried some ear-playing at home, but not by playing along with a recording, and they did

not feel they had had much success. Only one student – Tom – regularly played along to recordings at home: 'When I'm bored, I pick up the clarinet to play, when I'm listening to some music, I just play along with it'. Even he, however, said that the project strategies had given him a 'more rounded kind of information type-thing', and made him more aware of how music could be learnt in this way. Every student, apart from Tom, said that at first they had thought the task was going to be more difficult than it later turned out to be.

In case at this point some readers might worry that the learners were being pressurised into something they were not enjoying, it is perhaps worth mentioning that at the end of the project, 5 of the students rated the lessons as 'enjoyable', and the remaining 10 as 'very enjoyable'. All but one of the students also said the project would have a beneficial effect on how they learnt to play their instrument in the future (the remaining one said it would have no effect); all the teachers were immensely enthusiastic about the project, and continued to use the strategies in different ways after the project was over.

Data-analysis and the emergence of 'style-like' learning responses

As I worked through the recordings of the lessons, I coded the data using an iterative constant comparative approach designed to elicit emergent themes (see e.g. Glaser and Strauss 1986, Charmaz 2006). One area that unexpectedly began to emerge, was that the coding produced four categories concerning how the students approached the task. At the end-of-project teacher meeting I explained how each of these categories had emerged, presented the criteria on paper, and played one audio-example of each category to the teachers. The audio-examples were the recordings of the very first moments in which each student had attempted to aurally copy the very first riff or melody of the project. I then played further examples of first attempts, one from each student, and asked the teachers to independently categorize each one according to the same criteria, acting in the manner of judges in an expert panel. I also asked them to note whether they felt the examples fitted none of the criteria, or would be more accurately described in a different way than the criteria allowed. There was a 100 per cent agreement with my own categorisation in all cases but one, where one teacher had classed one pupil differently from how I and the other two teachers had categorized her.

Below I will present the four categories, again focusing on the very first moments of each child’s attempt to copy the very first riff of the project. But first, Schmeck has this to say about learning styles:

> A style is any pattern we see in a person’s way of accomplishing a particular type of task.... Observation of a single action cannot reveal a style. One’s impression of a person’s style is abstracted from multiple experiences of the person under similar circumstances. (Schmeck 1988a: ix)

However, it may be that his statement does not particularly apply to this aural-learning task, or indeed to some other music-learning tasks. There are two main reasons for suggesting this. One is that, as already mentioned, most tasks in cognitive style assessments involve thinking skills which, therefore, the participants will have been engaged in, one way or another, from early childhood, such as categorizing, recognizing, analyzing and so on; and they also require skills such as answering questions, i.e. communicating in speech, drawing, reading and writing. It would indeed be difficult to separate out what is ‘style’ from what is ‘strategy’ on the basis of a single observation of such behaviours, given that each individual may well have developed a number of strategies over their life-course, which could conceal their underlying style. In the case of the music-learning exercise under consideration here, however, the task was one which 14 of the 15 students had never attempted before in any way; and even the student who had done it before, said he had not done it systematically. Here then was an opportunity to observe the students doing something for which they had had no previous chance to develop learning strategies. Secondly, throughout the project, regardless of the particular piece of music being played, the students generally retained the same basic approaches to learning, or in other words they did not ‘switch off’ their ‘style’. I and the teachers judged this to be the case even though they gradually improved at the task, and even though, as I will mention later, many of them began to adopt various ‘strategies’ to cope with the task. For both these reasons, it seems plausible to suggest that the students’ initial, spontaneous responses may have revealed some underlying, style-like learning tendencies, or what from here I will refer to as ‘learning styles’. Next I will give an illustration of each of the learning styles that emerged, by considering how they manifested themselves in the very first responses of the students.

1. The ‘impulsive’ style

This style contained only one student, Fred, whose approach to the task seemed quite distinct from that of any others, and therefore could only be categorised individually. It is worth mentioning that Fred had some special educational needs, and although in this project I was not able to investigate special needs issues, any link between the concept of musical learning styles being put forward here and special needs could certainly be an interesting area for further work. In the first lesson, having listened to the opening of the full track, ‘Link Up’, the task of listening and copying the bass riff was explained to him, then the repeated bass riff track was put on the CD player. Below is an extract from the lesson transcript and annotation. (The annotations were written in an informal, non-academic language, often describing what is heard on the recording as it runs along, and adding perceptions that came to mind. I have largely resisted the temptation to edit these notes in a more formalised way. Round brackets surround the annotations, with square brackets where something has been inserted into the article for editorial purposes.)

> *Fred (trumpet), lesson 1*
>
> (3:20 Bass track starts. After listening to only one rendition of the riff, Fred starts playing his trumpet, loudly and apparently with enormous confidence. He plays the rhythm correctly, but is mainly playing all on one note, (not one of the correct notes, and it’s slightly out of tune); then he switches to another note and sticks on that. Then stops. He plays very loud, but that might be because he can’t make a sound quietly.)
>
> -LG: That was brilliant. (3:44 music is switched off). That was a really sort of forthright attempt, and you got the rhythm, but not quite the right pitches. But I will try not to interrupt you now, I will just leave you to play and see what happens to you. Very interesting.
>
> (4:01 Music starts. Fred plays along loud and confidently, starting dead on the first note straight after the two-bar drum intro, and with a great deal of accuracy in terms of rhythm; but with a set of pitches that bear only some similarity to the actual ones on the track. By the end he has settled on his own two-note version of the riff. He is playing B-flat for the first three bars, then F – notice that this works somewhat with the original in harmony, although he’s not playing the harmony of the actual track but his ‘own’ harmony of B-flat major…. 4:53 music ends.)

I called this the ‘impulsive’ learning style, by which I mean that Fred started to respond to the music so quickly that he had hardly any time to listen to it first; that he played loudly and with seeming confidence; showed no concern for whether his pitches matched those of the recording; and kept going without stopping to make corrections, ask questions or assess progress. The fact that he arrived at an approximation of the riff which worked in its own way along with the recorded riff, is not a necessary condition of this definition, but is worth noting, as is the fact that his rhythms were very accurate.

2. The ‘shot-in-the-dark’ style

Seven of the 15 students were placed in this style-category. One example is Oliver, who had been playing the trombone for two years:

> *Oliver, (trombone), lesson 1*
> (Track starts. Oliver is very mobile, rocking in motion with the music, often closing his eyes, and seeming to point to notes as if they were in the air around him. I keep on expecting great things, but he holds his trombone down at his side, then occasionally lifts it to his lips, and drops it down again. He doesn’t play anything at all for 16 whole bars. At bar 17 I say: 5.04)
> -LG: Have a go whilst it’s playing, and don’t worry if you get wrong ones. If you get a note that is wrong then you know it is not that one. So try to remember what you played.
> (The track is continuing to play. 5.22 At bar 32 he finally goes for an apparently random note; stabs at it once, quietly, winces, and stops.)
> -Oliver: That’s the wrong one!
> -LG: OK, don’t worry. You can find out the right notes by playing the wrong ones, you see. Have another go. Once you have got the first one, you will probably know the others.
> (Still he plays nothing, then attempts one note. 5.34 Then nothing.)
> -LG: Try again. (5.54 music stops,)

In contrast with Fred, this is an example of someone who appears to be listening carefully. Each time he tried to find a note on his instrument, he went for one that happened to be ‘wrong’; winced, and immediately stopped playing. Even if he played a correct note, he did not seem to recognize it as being correct. He seemed to have some fear and doubts, was very hesitant to even try a note, and played quietly. A question I asked all the students in their end-of-project interview was: ‘What was your immediate thought when I first asked you to do the task and I played you the track?’ Oliver replied that his thought was: ‘It’s not going to happen!’ He also, incidentally and perhaps surprisingly, was amongst those at the end of the project, who said they had found the task ‘very enjoyable’.

Below, by way of further illustration, are three other excerpts taken from the very first moments of each attempt, from three of the remaining six students who were placed in this style-category:

Molly (euphonium), lesson 1

(Music plays. Molly tries isolated notes.)

-LG: You’re going about it in exactly the right way; this is exactly the right way.

-Molly: OK.

-LG: Try a note, ‘No, that doesn’t work’; if you can remember which ones you’ve tried that didn’t work, then you can eliminate them eventually.

-Teacher: Don’t worry about your sound, just keep buzzing-

-LG: Yeah, yeah, yeah.

-Teacher: You can keep buzzing really loud in here, it’s fine.

She tries a note.

-LG: You’re getting closer.

(She tries another, which is actually the correct first note but she didn’t seem to realize that.)

-LG: Was that it?

-Molly: Er, no, I don’t think it is.

-LG: Try it again.

(She tries and looks towards me with raised eyebrows.)

-LG: (inaudible) I think that’s the first note you’ve got there. Try it again with the-

(She tries and nods.)

-LG: That’s it isn’t it? Well done! I wonder if you might get the second one?

Shilpa (saxophone), lesson 1

(Track 2, the bass riff, starts up. After one riff has played, Shilpa tries a note, then another note, then another on the saxophone. Then another and another. None of them is right. She only plays one note, then pauses, then plays another….)

-LG: Well done, you are doing very well. (Music continues). Just go a little bit lower. Can you go lower?

(Music continues. Shilpa is trying lower notes.)

-LG: That's very good. Just go one up.

(Shilpa plays a note higher.)

-LG: One down.

-Shilpa: One down lower from the really low one?

Joelly (piano), lesson 1

(04.01 Track starts up. [This is not 'Link Up, but a melody from Brahms' first symphony, fourth movement, which I used for three pupils just for the first lesson, before deciding to use 'Link Up' instead.])

-LG: …what I'd like you to do, whilst it's playing, 'cause it's going to keep repeating, is see if you can find the notes.

(Track continues. Joelly stares at the keyboard, apparently completely foxed by the task, for nine full bars. At the tenth bar I say:)

-LG: Try some notes and see if they're right.

(Track continues. 04.29)

-Teacher: Just try any one and then-

(Joelly plays a high note, then a low one, very quietly, then a very high one, apparently quite randomly, at intervals of over an octave apart from each other. 04.41)

-LG: That's fine, that's fine.

(Joelly continues. Still apparently completely random notes, all played very hesitantly. 05.15 She hits on a note that is quite prominent in the tune, but doesn't seem to recognize it as such and carries on playing far-flung pitches. Later she finds a note which she repeats, as if she thinks she has found a 'correct' one, although it isn't; then soon after, another one which she repeats, and which is correct. 05.25

> Now she is beginning to play more notes with shorter pauses between them. Also, they are more within the pitch range of the music she’s copying. 05.36)

3. The ‘practical’ style

I called the next category the ‘practical’ style. The students within this category seemed to take an approach which could be described as ‘practical’ in two senses. One sense is that, rather than holding back and stabbing at notes in the manner of the ‘shot-in-the-dark’ students, they seemed quite pragmatic, and started off by *playing* their instrument, in other words, by ‘practical’ means. In that sense, their approach was similar to that of Fred, the ‘impulsive’ student. However, in the second sense in which I am using the term ‘practical’, they took a more ‘practical’ approach than Fred, in that they spontaneously broke down the task into what could be conceived of as ‘practical’ components, rather than just keeping on going regardless as Fred did. Although the ‘practical’ approach can be understood as a ‘learning style’ in the senses already discussed, it therefore contains within itself some actions which can also be described as ‘strategic’. In other words, it was as though the students in this category had a ‘hard-wired’ or inbuilt tendency to approach the task in a practical, strategic way.

Five of the 15 students were placed in this style-category. One approach they had in common was to play their instrument quietly, unlike Fred, but not in the quiet, hesitant way identified amongst the ‘shot-in-the-dark’ students either. Rather, playing quietly enabled them to listen carefully to the CD without drowning its sound with their own playing. Another approach was to play up a scale until a central note in the riff was hit, at which point the student would usually immediately recognize it as one of the correct notes, use it as an anchor, and work out the other notes from there. A third approach was to do something I later called ‘dwell and catch up’, which was to dwell on a few notes and practice them a couple of times, even though the music on the CD track was still moving forwards through time, then to catch up with the music by leaving out the next few bars, and do the same thing the next time the same notes came around. In this way they would fill in the missing notes, not necessarily by following the order in which the notes come on the recording, but by starting perhaps in the middle of the riff and working backwards and forwards.

In most cases, by the end of the first attempt, these students had got the whole, or almost the whole riff correct, enabling them to move straight on to the next riff. Out of the five examples, here are three to serve as illustrations:

Tom (clarinet), lesson 1

-LG: so if I put that on then you will see (3:30 track starts up) how you go about finding notes, even with only eight fingers.

(Tom had two fingers in a bandage. He plays his clarinet quietly. This enables him to hear the CD. He plays up a few notes of a scale, hits the right note, immediately recognizes it, and stays on it. He then quickly guesses nearly all the other notes – including the F – first time.)

Edward (piano), lesson 1

(Track plays. [Edward is attempting the right-hand part of a slightly simplified arrangement of ‘Fűr Elise’, rather than ‘Link Up’. As explained earlier, for the very first lesson I used classical tracks with three of the students. Incidentally, Edward said he did not previously know the notes of this famous tune.] As the track plays, I am explaining to Edward that he can start to find notes. 5.47 He starts to look. He plays a B, then an A, both in the correct octave range, then leaps to the top E, which is the starting-note. Then he seeks one of the lower notes, keeps going, waits for the opening, plays that, then seeks others, often by step-wise movement. He gets nearly the whole thing, then I turn off the machine.)

-LG: You did brilliantly!

-Edward: Yeah?

-LG: Brilliantly! Now that’s it, it lasts two minutes then you can just put it back on again, and carry on. And then there’s – can we have track, um, four, yes.

(6.49 Track 4, the bass part, plays. Edward starts seeking notes. He gets the first note after having tried a note one-fifth away; then he tries playing triads, where the actual phrase is notes 1 – 5 – 1 of a chord. He then realizes this, gets the first three notes and very quickly after that, gets the second set of three. The track comes to an end.)

Katie (cello), lesson 1

(3:00 track 2, the bass part of ‘Link Up’ starts…. As soon as she hears it, played on a bass guitar, Katie asks if she can play pizzicato. I nod. She then gets the whole riff quickly. She does it by playing a scale very quietly to find the initial note; then experiments. If the CD riff has a long-held note, she uses that time to try out the notes that just went by, then she catches up the time. By 04.09 she has the whole riff…. 4:45 track 3 starts.)

-LG: You might need to transpose it down a bit.

(Katie listens to almost two renditions of the new riff, than seeks notes by scalar movement; as soon as she hits the correct starter note she realizes it’s right; then plays the rest of the riff, which is a downward scale, correctly straight off.)

4. The ‘theoretical’ style

Two students were placed in this category. They seemed more inclined to ask questions than to play notes. One of them is William, who had been playing the violin for 4 years. Immediately after I had explained the task and we had listened to the full instrumental track of ‘Link Up’, he said:

William (violin), lesson 1

-William: Which part are we going to be playing, since there were several instruments?

-LG: They were indeed. Yes. There were several.

-William: So which one are we going to be playing? Or are we playing all of them?

No-one else asked this question, or indeed any question at this point. The next extract comes from when William first tried to pick up notes from the bass track:

William (violin), lesson 1

-LG: OK?

(William is standing, listening, holding his violin by his side).

-LG: Take your violin up then, and just play a few notes.

-William: It’s only playing three notes I think. Three different notes.

-LG: Absolutely correct.
(He tries a few notes.)
-William: No, I don’t know [how to do] this….

Other comments and questions he proffered over the course of the project include those below, which the reader might otherwise assume were made by myself or his teacher!

-Because the chords, the top chord, the middle chord, and bottom chord were the same rhythm, just different notes.

-It was third finger on the D string wasn’t it?

-The top notes are chords.

-So it just goes second finger, second finger and then first finger, right?

-So it’s just the same three notes that just keep on, that they are going to repeat…. So it just keeps on going on. D-C-D, D-C-D.

-It just goes like third finger, second finger, third finger and then it repeats that once and it goes third finger, first finger on the E and then back.

-I think it starts somewhere around the E string, but I’m not sure.

The other student placed in this style-category was Liz, who had been learning the piano for two and a half years. The example below comes from her second lesson, but there was little continuity, as she had been in hospital for a month between the two lessons. At the very first attempt – in both lessons – she briefly took a ‘shot-in-the-dark’ approach in the same way as those above. But within a few minutes she also added another dimension which they did not do:

Liz (piano), lesson 2
(07.30 track is coming on.)
-Liz: Is it the same note? Is the third note the same as the first?

-LG: Yep, try that.

(She tries.)

-Liz: Is it just-

(She plays a note.)

-LG: Yeah.

-Liz: Does it just, is it just the same notes twice?

-LG: Mmhmm

-Liz: OK.

(Then the riff changes.)

-LG: Until that bit.

(Liz is continuing to listen throughout this, rather than try to find notes by playing.)

-Liz: Is it the same notes three times?

-LG: Mmhmm.

-Liz: OK.

-LG: Have a go and see what happens.

Like William, Liz seems to have a very analytical, theoretically-orientated approach to the task. She is listening with concentration, but instead of autonomously applying a practical strategy and trying notes on her instrument, she asks questions and appears to want to work out each note, in theory, before she tries to play. Unlike Fred’s ‘impulsive’ style of learning, and the ‘practical’ style of five of the students, but rather like the ‘shot-in-the-dark’ style of seven students, she and William seem to have a disinclination to play a note; perhaps there is some fear that the note might be ‘wrong’. Only with some persuasion do they touch the instrument at all. Overall it seems fair to say that their approach is dominated by a theoretical, as distinct from an ‘impulsive’, ‘shot-in-the-dark’, or ‘practical’ style. I called this the ‘theoretical’ learning style.

An overall picture of the four learning styles

Table A gives an overall picture of which students were placed within each style-category, including their age, instrument played, and number of years of taking lessons on that instrument.

Impulsive	Shot-in-the-dark	Practical	Theoretical
Fred (14) trpt 4 yrs	Oliver (13) trom 2 yrs Shilpa (15) sax 4 yrs Evie (13) vln 5 yrs Molly (14) euph 8 mnth Raksha (14) cello 3 yrs Joelly (10) pf 2 yrs Parvesh (13) clar 3 yrs	Tom (13) clar 4 yrs Edward (17) pf 12 yrs Ruby (14) pf 5 yrs Jessica (15) pf 7 yrs Katie (15) cello 8 yrs	William (12) vln 4 yrs Liz (13) pf 2 yrs

Table A: the categorization of the students' learning styles

Clearly the numbers are as yet too small to claim any predictive or generalisable powers in themselves, although I will suggest some implications that are raised by this table below. However, first I wish to briefly suggest three other factors which have relevance for the discussion.

Pitch-sense, rhythm-sense and learning 'strategy'

Two important factors which intertwine with the notion of learning styles in these findings, are those of pitch-sense and rhythm-sense. Although there is not space here to go deeply into these complex areas, it is worth introducing some possible ways in which they interact with the concepts already put forward.

Clearly, the students who were placed in the 'practical' style-category displayed a stronger idea of where and how to match pitches on their instrument with those played on the recording. Research on the possession of 'perfect pitch', or 'absolute pitch', suggests that the ability to recognize and accurately identify a pitch by ear is learned rather than in-built, and that in societies where musical training is more common in young children, more people develop the skill (Miyazaki 2004, Vraka 2009). In the current project, I found it particularly interesting that students who showed signs of possessing 'perfect pitch' crossed three of the four learning styles (not including the 'impulsive' Fred), rather than coming from only the 'practical' style, as might otherwise have been expected.

Signs which I considered suggested a student possessed some degree of perfect pitch were manifested when, for example, a student went straight to the right starting note spontaneously, or hovered over the correct note without actually playing it (which was of course most easily observable on the keyboard). Sometimes they spontaneously played the correct note as the very first note they attempted, but without necessarily immediately recognising it as correct. Such events occurred not necessarily on the first attempt at the first track, but often on the first attempt of a new, second or third track on first hearing, and they increased as the lessons went by. Out of 18 separate examples from eight students (Tom, Edward, Jessica, Raksha, Liz, Joelly, Parvesh and Katie), here are two representative snippets. Both concern students who were placed in the 'shot-in-the-dark' category.

Joelly (piano), lesson 2

(On hearing the next track, Joelly's eyes went immediately to the correct area of the keyboard, and all the notes she played were the right notes, but in the wrong order…. [new track starts up.] Again her eyes go to the right area of the keyboard. She seeks notes, disjointedly. She suddenly gets the right first note. With a bit of encouragement she tries again, then gets the second note and tries several times for a third note that's not right….)

Raksha (cello), lesson 6

(4:45 Track 16 starts up again.)

-LG: See where you can go with it. Try some notes, if they don't work, try some others.

(Raksha tries very hesitantly on the cello. The first note she plays happens to be correct although she doesn't seem to realize it.)

-LG: Well done. You went straight onto the right note there, first time.

(She looks at me with a quizzical expression.)

Other students, including Fred, showed gradual and in some cases marked improvements in their ability to identify and seek pitches as the lessons went by, including the ability to follow correct pitch-*contour* even if the starting pitch was incorrect. The possession or development of pitch-sense did not seem to correlate with any particular learning style as identified in this paper. There are many more things to be said about this topic, and much room for further research. For now, it is perhaps just worth noting that none of the students, when interviewed, thought they possessed perfect pitch, even amongst those who had shown clear evidence of it.

Many students who appeared to have a relatively weak pitch-sense at first, displayed a strong rhythm-sense, and vice versa. Fred ('impulsive') and Molly ('shot-in-the-dark') were amongst the former, with Oliver ('shot-in-the-dark'), Jessica ('practical'), and Joelly ('shot-in-the-dark') amongst the latter. As with pitch-sense, rhythm-sense improved across all the students over the course of the project.

Overall, although pitch-sense and rhythm-sense are crucial aspects of musical ability and music-learning, if the current suggestion of the presence of something 'style-like' in the students' approaches to this aural learning task is to be entertained, it would seem that learning style would not include these factors, but that the factors cut across a range of learning styles.

Also cutting across pitch-sense and rhythm-sense, a large number of what I came to regard as learning 'strategies' gradually made themselves evident. I felt these were different from 'styles', in that they were not present at the outset, and did not come spontaneously to the learners, but involved the conscious adoption of steps or tactics, to go back to Schmeck's (1988c) definition (above), which were geared towards achieving explicit goals. Many of the strategies were suggested by myself or the teacher, whilst others resulted from practicing at home. The latter included, for example, arriving at the lesson with the riff written down on paper (not necessarily in traditional staff notation, and not necessarily correctly). William ('theoretical'), Evie and Raksha (both 'shot-in-the-dark') all did this, (but found it even harder to play the riff from their notation than by ear!) The fact that this activity was not included in my analysis as a learning style might be a twist brought about by the research methods. Certainly 'writing things down' could define a style that some learners would apply as an inbuilt mechanism. It is worth noting, however, that pupils in two of the learning styles identified here – 'theoretical' and 'shot-in-the-dark' – did this; so there might be reasons for thinking that those styles are more likely to lead to the adoption of written strategies than the other two styles.

Other strategies seemed to overlap with what had been identified as styles for other learners. For example, some strategies involved the adoption of approaches that marked the 'practical' style, but in ways which had to be *taught* or at least suggested, rather than being apparently inbuilt. Such strategies involved pupils taking up the 'dwell and catch up' approach which was identified as spontaneous amongst the 'practical' pupils. Others involved the habit of playing up a scale to find a note; but again this was often suggested or demonstrated to these students by myself or the teacher, or arose some time after a period of trial-and-error. Another example of strategies overlapping with styles is that as time went by, six students developed a more 'theoretical' approach, in the manner of William and Liz, asking more questions as they

apparently gained in confidence, although three pupils asked no questions at all in any of the lessons. In such ways, students seemed to progress from the behaviours that were involved in one learning style, *into* those that were involved in other styles, but they consciously adopted those behaviours as learning *strategies*. Other learning strategies bore no relation to the style-like behaviours as identified here, but there is no space to go into these.

Further research

Clearly the findings put forward here would need to be tested on a larger scale and over a longer time-span before any robust claims for their generalisability and significance could be made. As mentioned earlier, a main study is due to take place, and this is likely to involve around 30 to 40 teachers and a few hundred students. Amongst other things, we will be keeping a close watch on whether these findings seem to be replicated. In addition, there are numerous variables which may reveal patterns that could not surface with small numbers – not all of which will be manageable within the main-study, but which could in theory be investigated in future work. These include age, sex, ethnicity or cultural background, the demands of different instruments, the length of experience of learning to play the instrument, the style of teaching and learning that the student is accustomed to, the student’s other music-learning experiences, and many more. It could turn out, for example, that more piano students are placed within the ‘practical’ category, which in turn might cast doubt on the validity of the category, and could suggest that the instrument plays a large part in determining the learning style. Clearly a number of other issues could surface along similar lines.

Another aspect of the research which could benefit from further exploration is how much each individual’s learning style, as characterized here, might correlate with their style in relation to other, non-musical tasks, as measured by other existing models. There are many potential overlaps with various existing theories and models. One model that I have found particularly close to my own categorization is the ‘impulsivity-reflectivity’ dimension identified by Kagan (see e.g. Kagan et al, 1964, and Kagan, 1966). He and his colleagues measured the speed at which an individual makes decisions in different circumstances, which led them to identify two dimensions:

> The first is called reflection-impulsivity and describes the degree to which the child reflects upon alternative classifications of a stimulus or alternative solution hypothesis…. In these situations some children have a fast conceptual tempo; they impulsively report the first classification that occurs to them or carry out the first solution sequence that appears appropriate. The reflective children, on the other hand, characteristically delay before reporting a classification or carrying out a solution hypothesis. They actively consider the alternatives available to them and compare their validity. The reflective child behaves as if he cared that his first response be as close to correct as possible. (Kagan 1966: 488)

The above may come close to the 'impulsive' and 'shot-in-the-dark' learning styles identified in the current article; or to the 'impulsive' and 'theoretical' ones. However, Kagan et al's second dimension, 'visual analysis', does not appear to have so much in common with the auditory styles considered here; and indeed the tasks used to assess both dimensions were very different to the aural psycho-motor musical tasks of the sort discussed in this study.

Further research might usefully investigate, not only whether the concept of 'learning style' in aural music-learning can be upheld, but also whether different categorisations to the ones suggested here might be more helpful. There is also the issue of whether the same style, or other styles, could be observed in different circumstances, by comparing a set of musical tasks across for example, the classroom, the instrumental tuition setting, the informal setting, and so on. We could also investigate whether children, or adults, who have never had an instrumental lesson would exhibit the same tendencies as those who have. Similarly, categorizations of learning styles and strategies could be suggested concerning other musical tasks, such as playing from notation.

It might be beneficial for researchers to do a pre-test and post-test by, for example, measuring musical ability using a standard test before and after the intervention, so as to identify patterns and correlations in individuals' responses, or to what extent measured musical ability might or might not improve. There are indications that commonly-accepted notions of what constitutes strong or weak musical ability, as assessed through standard musical ability tests or through performance exams, may not apply to these aural approaches: some students who have been designated as having high ability may be less adept at this task than those who have been designated as having low ability, and vice versa. By a similar token, some learners who are at

beginner standard on their instrument may be deemed more adept at this task than those graded as more advanced. There is much room for the exploration of such questions.

Implications for teachers and pedagogy

If the concept of 'learning style' in relation to instrumental musical skill is worth entertaining, then it should contain some possible implications for pedagogic practice. As suggested by Witkin:

> …it is easy to see that a teacher's cognitive style may influence his way of teaching, that a student's cognitive style may influence his way of learning, and that a match or mismatch in cognitive style between teacher and student may determine how well they get along, with important consequences for the learning process. (Witkin 1978: 57)

Many authors echo a similar sentiment, and there is some agreement that, as Riding and Raynor (1998: 87) suggest, introducing self-awareness of cognitive style into pedagogical practice could 'contribute directly to the enhancement of learning'. Similarly, if teachers are aware of different learning styles among their students, it could make them more open to a greater range of pedagogic approaches, and more able to help a greater range of learners. Schmeck (1988b: ix) suggests that understanding the styles of individual students could help teachers to 'anticipate their perceptions and subsequent behaviours, anticipate their misunderstandings, take advantage of their strengths, and void (or correct) their weaknesses'. Conversely, as put by Hamblin:

> To try to impose a learning style is the pedagogic equivalent of imposing a false self upon someone – an act which is inevitably as destructive in the long run. (Hamblin 1981: 21, cited in Riding and Raynor 1998: 7)

Further research could shed light on the possibility that, if some instrumental learners have tendencies towards what I have called the 'impulsive' and the 'practical' learning styles, they may be more drawn towards aural, informal learning; whereas those with inclinations that are more of the 'shot-in-the-dark' or 'theoretical' sort may be better suited to learning to play an

instrument by notation. This is of course not to say that both types of learning – by ear and by notation – ought not to be made available to all instrumental learners. Every student in the project said that afterwards that, given the choice between learning only by notation, only by ear, or both, they would choose both. But further understanding of learning styles might possibly correlate with or predict which approach would come more naturally or easily to different learners. This could help teachers devise pedagogies that are sensitive to a greater range of needs. Issues concerning inclusion and special needs will be especially relevant here. The theory could also possibly help explain why so many young instrumental learners who have in the past turned away from classical, notation-based tuition, have gone on to prove themselves highly capable, and in some cases have become world-class instrumentalists through learning to play entirely informally by ear (see e.g. Green 2001 on this).

There is always a need for caution. Whilst considering the potential advantages of learning style theories for pedagogy, we also need to consider the possibility that the concept of learning styles may be mistaken or misleading, and could lead to *un*helpful pedagogic practices. For example, style theory could lead to labelling or reification of a student's response by a teacher. Stahl (1999) offers a critical review of various theories, although his comments are largely addressed to the use of learning style constructs in literacy-teaching. Other criticisms are reviewed briefly by Riding and Raynor (1998: 50), including the suggestion that there are too many different models, and too much subjective self-reporting, to make the style construct robust. However, there is a good deal more work in support of the learning style concept than critical of it, and it has become an implicit assumption of many more recent approaches to learning-how-to-learn and learning-how-to teach.

It is perhaps worth repeating at this point that, as I stated earlier, the participants – including both the students and the teachers – found the project enjoyable and beneficial. In addition, various increases in certain instrumental abilities and certain areas of musicianship among the students were identified. This was done through participant-observation of the lessons and analysis of the transcripts, teacher-meetings, and interviews with the teachers and students. Progress was pin-pointed not only in the students' increased ability to identify and match pitches, pitch-contour and rhythms, as discussed earlier, but teachers felt that that their students' playing underwent some other surprising developments. These included an increased ability to play with more 'flow' or 'feel', to keep going for longer, to apply more sensitive phrasing and dynamics, to listen more carefully to themselves as well as the recording and, in the case of string and brass players, to play more in tune. Some students made leaps in their playing that their teachers had

previously not thought them capable of, such as playing high notes on brass instruments, tuning by ‘lipping’, using different positions on string instruments, or gaining independence of the hands on the piano. (See Green 2008 for a discussion of similar issues in relation to the informal learning classroom pedagogy on which this project was based.) Such developments have no necessary connection to the issue of learning-style, but they do suggest that further understanding of how different learners are liable to spontaneously approach a musical aural-learning task of this kind might be enlightening, and might aid teachers in bringing out the best from their students.

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[1] For recent literature reviews of theories, models and assessment protocols in the field, see e.g. Zhang and Sternberg (2006), or Coffield et al (2004). Riding and Raynor (1998) provide a useful overview of work up to that date. Schmeck (1988) and Sternberg and Zhang (2001) offer anthologies with chapters by many of the core authors in the field.

[2] The study, 'Musicianship and motivation in the instrumental lesson' was funded by the Esmée Fairbairn Foundation, with support from the Institute of Education, University of London, UK between 2008-10.

[3] www.musicalfutures.org. The pedagogic methods and materials of this particular project within 'Musical Futures' are available on www.musicalfutures.org.uk/c/Informal

[4] Also to be funded by the Esmée Fairbairn Foundation and the Institute of Education, University of London.

[5] These include a keynote address (February 2009) at the conference, *Formale und informelle Lern/lehrprozesse bei der Entwicklung instrumentaler und vokaler Fertigkeiten sowie kommunikativer und expressiver* „performance skills"'. Konsequenzen für die traditionelle Instrumental- und Gesangspädagogik, Vienna University of Music and Performing Arts, Austria; Guest Lecturer, Open Lecture and Post-graduate seminar, (June 2009), University of Aberdeen Music Department, Scotland; and a short address to the English Federation of Music Services in the summer of 2009.

[6] See e.g. Zhang and Sternberg (2006: 12); Riding and Raynor (1998: 15); or Keefe (1987: 6).

[7] There are many exam boards examining thousands of young learners in the UK, with similar set-ups in other a range of other countries. In the UK, the boards tend to adopt a system of eight

grades, with Grade 8 being the most advanced. A Distinction in Grade 8, or beyond, would normally be needed to get into an undergraduate conservatoire course

[8] One girl, Liz, had only two lessons because she had to go into hospital during the project; however she and her mother agreed that she should nonetheless participate in the interviews, and I have included data from her lessons and interview along with all the others.