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Playing an Instrument

Gary E. McPherson, Jane W. Davidson, and Paul Evans

<A> Abstract

Learning to play a musical instrument is one of the most widespread musical activities for children. While much research in the past century has focused on the assessment of musical abilities and the content of their lessons, more recent research has focused on children's interactions with their social environments and how these interactions impact their ongoing ability and motivation to learn and play music. This chapter explores these social and cognitive developments starting with how children and their parents select an instrument and negotiate the commencement of formal music learning, through to the task related cognitive strategies children use to overcome the difficulties associated with learning and practice, and the ways they may eventually become able to integrate an identity as a musician with their own sense of self. Aspects of self-regulation and self-determination theory are discussed.

<A> Keywords

Task strategies, playing instrument, parents, identity, cognitive, music, formal music learning, self-regulation, self-determination theory.

<A> Introduction

One of the most common and popular ways a child can be involved in music is to play an instrument, so it is important to include a chapter on this aspect of musical development in this volume. Traditionally, literature on this topic has focused on performance skills and the acquisition of technique on particular instruments. More recently, however, this emphasis has been broadened through research dealing with cognitive aspects of learning (such as values and beliefs about music, the reasons children engage with music, and the way they structure their practice) and social aspects of learning (the relationships children have with their teachers, parents, and peers) and how these interact to impact children's ongoing musical development. In this chapter we focus on this latter body of evidence in order to explain some of the underlying principles that govern how children develop their capacity to mature into performing musicians.

The chapter begins with a description of the various catalysts that shape children's initial motives to commence learning and their choice of an instrument when they begin formal training. We then explore what children expect and value from their learning and how this aspect of motivation influences their subsequent musical development. This leads to a discussion of the types of strategies children need to acquire in order to become successful performers, and the playing habits and practice techniques that either enhance or impede their progress. A final section deals with the help and encouragement children need to receive from their parents if they are to develop into successful, self-regulated learners. The chapter reviews instrumental learning within the Western musical tradition, based on the available literature and popularity of these instruments worldwide. It is our hope, however, that some of the basic principles we propose can be extrapolated and

applied to the learning of different types of instruments within other musical styles and genres.

<A> Starting age and early experiences

Within reason, the adage "the earlier the better" is probably appropriate as a general guide to when children should start learning an instrument. In practice, however, there are many differences between instruments, with physical maturation and mental attention span often being used by teachers and parents to guide decisions on whether a child is ready to begin formal lessons. Children learning the keyboard can start as early as two or three years of age, preferably with informal play activities. For strings, some Suzuki teachers recommend no earlier than the age of three, when smaller sized instruments ensure that the physique to play these instruments does not cause problems for children with particularly small fingers. But for brass and woodwind instruments which require more physical strength it is unlikely that children will have much success until at least six or seven years of age when they have acquired the physical ability (and the teeth) to maintain a correct embouchure and move the air through the instrument in order to produce a characteristic tone.

Musical instruments are now commonplace in childhood. While much of the 19th century saw advances in manufacturing that enabled widespread piano ownership within the middle classes, the 20th and early 21st centuries have seen the mass production of inexpensive acoustic and electronic instruments such as electronic keyboards, acoustic guitars, ukuleles, toy pianos, and recorders. The adoption of the acoustic guitar and

electronic keyboard parallels the broadening of the music curriculum in school systems, particularly in curriculum models such as those in the UK and Australia. These curriculums emphasise music composing and performing with an emphasis on broad access for students, rather than traditional curriculums that tend to be taken up only by those who have the opportunity for specialised training in an instrument. Unfortunately, this has led many schools to adopt the recorder as a means to providing inexpensive and accessible music performance opportunities in schools. The inherently unappealing and shrill sounds produced by these instruments may be the reason children regard them as the least popular of all instruments (O'Neill, 2001), not to mention the ironic difficulty in producing a pleasing tone on the instrument. With a broad curriculum, the keyboard and guitar, combined with informal music learning pedagogies, have proven more successful (Green, 2008).

Children who play such instruments at a young age often do not take lessons, because they are simply expected to use it in school, or if they possess one at home, it is used for fun rather than for serious study. However, these instruments can provide initial and unthreatening points of departure, and so their merits should not be underestimated. Indeed, Davidson, Moore, Sloboda, and Howe (1998) found that all of their 258 young music learners had played one of these instruments as a way of engaging informally with music in a playful and exploratory way before specialising on their chosen instrument. Looking back on their learning, some students regarded these earliest experiences as a basis for them to experiment with, get to know, understand, and enjoy music. In the case of one particularly enthusiastic student – Carl - the recorder was eventually adopted as

the main instrument, and he progressed rapidly (Davidson & Burland, 2006). He became obsessed with achieving and fascinated by the way in which he could manipulate the pitch and timbre of the instrument's sound.

Of course, children who begin learning traditional instruments, such as ensemble instruments or the piano, are generally much more likely to take lessons and participate in a structured learning environment right from the start. They can develop a liking for an initially disliked instrument, or a hatred for one they previously liked. In the work of Sloboda, Davidson, Howe, and Moore (1996) it was discovered that some of the most successful young learners were those who had been through a range of musical instruments, often settling on a particular instrument for pragmatic reasons. For instance, one of their students – Lisa - changed from violin to viola at the age of 12 years, realising that she was far more likely to have an orchestral career playing the less commonly learned viola (Davidson & Burland, 2006). In this case, her participation in music was more important than the instrument itself. But, this is not necessarily the case for all individuals.

<A> The decision to begin

In formal music programs offered at schools, the teacher's decision about which instrument might be learned is often dictated by what instruments are available for study, plus also what instruments need to be assigned to maintain a balanced instrumentation in the school's ensembles. Typically, however, a parent's view will often evolve from an entirely different perspective. Many will be concerned about the speed at which their

child will be able to learn the instrument. Very often they will also consider more pragmatic issues, such as whether the child will be able to continue learning the same instrument and perform with good ensembles after entering high school. In many cases, parents will also be concerned about the cost involved in learning, both in terms of the expense of ongoing lessons and maintenance of an instrument, as well as the eventual cost of purchasing a quality instrument if the child continues playing.

Market research by Cooke and Morris (1996) helps identify some of the important motivational concerns, from the child's perspective, that impact on long-term success in learning an instrument. They found that English children aged five and six were the most enthusiastic for expressing a desire to learn. Almost half of their sample of five and six year olds (48%) said that they were likely to start learning in the near future. But this enthusiasm is short-lived because by the age of seven less than half the children surveyed expressed a desire to learn an instrument, and this remained stable at about a quarter of non-playing children until 11 years. By the age of 14 only 4% of the children said that they were likely to start learning an instrument. These results need to be placed in perspective, however, because they depend on the type of instrument and music to be learned. Many rock guitarists for example, typically do not begin playing until they reach their early teenage years, but then, if they are highly motivated, make progress very quickly as a result of engaging in many hours of practice alone, with friends and in bands (Gullberg & Brändström, 2004).

<A> Choosing an instrument

Various intrinsic and extrinsic factors impact on why a child will choose one instrument over others. Some are intrinsically attracted to a particular instrument because of a liking for its sounds, or how it looks and feels (e.g., Boyle, DeCarbo & Fortney, 1993; Delzell & Leppla, 1992; McPherson, Davidson & Faulkner, 2012; O'Neill & Boulton, 1996). When difficulties such as trying to get a sound out of the instrument, or carrying it around in a large and heavy case become apparent, this genuine intrinsic appeal of the way the instrument sounds, looks, or feels can help to sustain engagement with it.

In other cases, children may begin learning because of extrinsic reasons such as wanting to emulate a model they admire, such as a famous musician. A more common reason is to join with friends who are learning at the same time. Indeed, children will very often become interested in joining a school or community musical ensemble because they wish to keep up with their friends who are also beginning (MacKenzie, 1991; McPherson et al., 2012). Other important extrinsic motivational influences include significant others, including encouragement from a family member or teacher (Sloboda, Davidson, & Howe, 1994). Sosniak's (1985) landmark study of concert pianists, for instance, shows that some of the highest achievers were reluctantly persuaded by a parent to start learning and it was years before they became passionately committed and intrinsically motivated to continue their own development and decide to become professional pianists. Unfortunately, the opposite can also be true: some children in Evans, McPherson, and Davidson's (2012) study enjoyed being in a band program with their peers in primary school, but by the time their music program in high school did not live up to the same social experience, they had not internalised their motivation for learning, and subsequently ceased.

Many children have been grateful in later life for having parents who insisted that they learn a particular instrument. In general terms, where motivation of this type is externally directed, rather than internally driven, sustaining an interest is more difficult. If learning is merely to please a parent or teacher, a child is unlikely to make much progress or to show much enthusiasm beyond the initial stages of development (Evans et al., 2012). This is even more apparent in situations where children encounter difficulties mastering the complex physical and mental skills involved in learning.

In terms of the advice given by teachers to their students, physical factors also appear to have some role in instrumental selection. A very large underbite or protruding or irregularly shaped teeth may cause endless frustration to a wind instrument player, in which case teachers may advise the child to choose an instrument that does not require the use of the embouchure. But advice must be given with caution, for a casual glance at almost any professional ensemble will show that many players do not possess 'ideal' physical characteristics for playing their instrument. The wonderful jazz trumpeter Chet Baker managed to play despite having lost many of his teeth, for instance.

It is therefore clear that no single factor will fully explain why a child will decide to learn an instrument. This is why our longitudinal research (McPherson et al., 2012) with beginning instrumentalists across the first three years of their learning has tried to clarify the blend of factors that motivate each individual child to commence learning. Many of our seven and eight year-old beginners said they began because they believed learning an

instrument might be fun, exciting or enjoyable. Their observations were often based on evidence of having seen and heard musical ensembles at their school and in the community, or knowing friends and siblings who were also involved as musicians. Indeed, these students who had a strong presence of music ensembles in their school and community were more likely to persist after three years of learning (Evans & McPherson, 2014; McPherson et al., 2012). When asked to explain why they selected their particular instrument, almost a third of the children said that they liked the sound of the instrument, thus confirming the important intrinsic reason cited above. Children also indicated, however, that the choice of instrument was influenced by what they perceived to be easy instruments to play, whether they liked the look of the instrument, whether they felt it was an appropriate size for them, or whether their friends were also playing the same instrument (see also, Boyle et al., 1993; O'Neill & Boulton, 1996).

As with other studies, our research has revealed gender associations with boys tending to choose so-called masculine instruments such as trumpets and trombones, and girls selecting more feminine instruments like flutes and clarinets (Abeles & Porter, 1978; Bruce & Kemp, 1993; Conway, 2000; Delzell & Leppla, 1992; Harrison & O'Neill, 2003; O'Neill & Boulton, 1996), even though these types of associations are being increasingly challenged. One such example can be viewed on the TV show "The Simpsons", where Lisa Simpson plays the saxophone.

In summary, the general evidence of our study and other related literature suggests that children not only have a projected belief about which instruments are more or less easy to

learn, but also a specific view of themselves in relation to their capacity to successfully master each particular instrument, with these impressions often being influenced by gender stereotypes.

<A> Personal expectations and values

It might be inferred from the above that children will either possess the right motivation or not to engage with music learning. To some degree this may be true, with some individuals genuinely being more intrinsically driven on specific tasks than others. In our view, a more appropriate way of thinking about this is to understand the personal beliefs that children hold and that are shaped by their experiences of the world around them. These include the expectations and values children bring to their first instrumental lessons that subsequently shape and influence their future development. For example, in our study we asked the children to explain to us before they began their instrument, how long they expected to play (McPherson, 2001). Results show that they were able to differentiate between their interest in learning a musical instrument, the importance to them of being good at music, whether they thought their learning would be useful to their short and long-term goals, and the amount of effort they felt would be needed to continue improving. Their responses were no different to what we would have expected if they were taking up any other activity. Many seemed intrinsically interested but did not feel that they would want to play the instrument all of their lives. Others seemed more extrinsically motivated, but recognized the value of learning for their overall education. For most of the children, learning an instrument was something useful to do while they were at school but something that would be of far less value in later life (Evans &

McPherson, 2014; see also Evans, Chapter 17). Only a small number suggested that they wanted to become professional musicians (McPherson 2001; McPherson et al., 2012), and indeed only one of the 157 students in the study appears to have pursued any professional (albeit part-time) opportunities as a musician 15 years later.

Our results are consistent with research in academic subjects that seek to understand what children expect and value in their learning (Eccles, 2005; Wigfield & Cambria, 2010). This work demonstrated that children are goal-oriented: They choose and gravitate toward activities in which they believe they can achieve and be successful. Their behaviour is directly connected to the personal beliefs they hold about the activity, such that their motivation is a product of expectations they hold for attaining success in learning and the subjective values they have for the task. More specifically, value can be understood on the following four dimensions:

- *Interest* – the personal satisfaction gained when playing and practising alone and with others, plus the love for the repertoire learned
- *Importance* – the degree to which learning the instrument fits with personal goals about what the child hopes to be good at
- *Usefulness* – whether learning the instruments is constructive and functional for what the child wishes to do, both now and in the future
- *Difficulty* – whether the outcomes of the learning process are worth the effort and investment required.

Within the context of a music performance examination, expectancies for success may be particularly important. McCormick and McPherson's (2007) study of children and young people aged 9 to 19 found that their expectations for success played a vital role in their achievement. As would be expected, those who had received higher grades in earlier examinations attained higher grades. But importantly, the statistical model was stronger when also considering students' beliefs about their success. In other words, the study found that students are accurate in their expectations about what they will achieve, but the beliefs themselves contributed to their success above and beyond their actual prior performance.

More broadly, beyond expectations about success, the length of children's musical engagement seems to be influenced strongly by their expectations for music in their lives more generally. We found this to be the case in two of our studies on children's musical identities. In the first, we asked children, before they began learning, how long they thought they would be playing their instrument for. There was a range of responses: some said they would play their instrument for a few months and then give up, while others articulated a view of their personal identities as musicians well into adulthood. The longer-term view turned out to be very helpful: combined with the amount of practice they did, a long-term musical identity sustained children's involvement for longer compared with a short-term musical identity (Evans & McPherson, 2014). The second of our musical identity studies (Evans & McPherson, in press) was a qualitative interview study of adolescents who were highly engaged in music learning and had high abilities. We found that those who had gone through a process of considering the role of music in

their lives well into the future, and those who made firm yet flexible commitments about that role, had more adaptive and coherent plans for their futures. Students who experienced anxiety or pressure in thinking about their future, or were not able to articulate their music learning in terms of its place in their musical identity, tended to have disjointed or vague plans.

<A> Sustaining involvement

As shown above personal beliefs associated with a desire to achieve not only influence children's motivation to continue playing but also shape their identities as individuals and their orientations as learners (see also Evans, Chapter 17). Two of the more important of these learning orientations explain why some individuals strive to achieve while others are prone to give up and deliberately avoid activities with which they believe they cannot become competent. The first of these, *adaptive mastery-oriented* students, have a tendency to continue working hard when faced with failure and enjoy putting effort into achieving their goals. These types of learners remain focused on trying to achieve, despite difficulties that might come their way. In contrast, *maladaptive helpless-oriented* students often fail to establish reasonable goals for themselves, or goals that are within their reach. When they feel that the situation is out of their control and that nothing can be done to alleviate the situation, they tend to avoid further challenges, lower their expectations, experience negative emotions, give up, and perform more poorly in the future (Dweck, 2000; O'Neill & McPherson, 2002).

Some evidence of these types of orientations as they might apply in music comes from O'Neill (1997), who studied 6 to 10 year old children during their first year of learning an instrument. Before beginning instruction, these children were given a problem-solving task and procedure used to assess their motivational patterns (O'Neill & Sloboda, 1997). Some of the children were classified as *maladaptive helpless-oriented* because they avoided challenges, showed low persistence, and performed poorly when faced with failure. Before they commenced learning, this group was compared with another group of children who were defined as *adaptive mastery-oriented*, in that they were more inclined to persist with their efforts following failure or experiencing difficulties.

O'Neill (1997) believes that studying these two motivational patterns is important, because bright and skilled children can display either orientation. Importantly, her results demonstrate how children who displayed mastery-oriented motivational patterns prior to commencing their instrument progressed to a higher level of achievement at the end of their first year of learning than children who display maladaptive helpless motivational patterns. Interpreting these findings, O'Neill suggests that the less successful students learned to feel helpless because of a tendency to focus their attention on their existing level of performance with the result that they could not see that the difficulties they were having now could be overcome in the future. Because of this, they tended to feel that any further effort would be futile. In contrast, the children with mastery orientations were more focused on how to increase their competence so they could perform better in the future. Consequently, they viewed failure as a normal part of their learning instead of something that should be avoided.

Thus, we can see how children's self-beliefs shape how they see the role of music learning in their lives. This is particularly important in an area as difficult and taxing for young children as learning an instrument, where the physical, mental and emotional effort needed to sustain long-term engagement requires a great deal of resilience and persistence. The personal beliefs that children hold for their own competence and capacity to master tasks therefore have a major effect on their subsequent ability to persist in the face of difficulties, stressful situations and competing interests (Bandura, 1997; Hendricks, 2013; McCormick & McPherson, 2007).

In addition to the above results, we also compared the comments of the children who continued learning with those who ceased playing across the first three years of learning (McPherson & Davidson, 2002). Children who ceased learning typically had unrealistically high expectations about how much practice they would undertake before commencing lessons. After they started, and the reality of learning set in, they then consistently undertook far less practice than their peers who chose to continue.

The results outlined above demonstrate that children bring many preconceptions to their first lessons, and that their progress is shaped by their expectations for being able to cope and succeed with their learning, combined with the value they place on the activity as something they will enjoy doing. This does not mean however, that children's initial motivations are fixed and that positive attitudes cannot emerge and evolve over time. As we have seen in the Sosniak (1985) study mentioned earlier, it is only after extensive

experience with music that many young learners will develop a lasting desire and commitment for performing beyond their school years.

<A> Task Related Cognitive Strategies for Performing

A hallmark of successful learners is the quality of the mental strategies they apply to monitor and control their learning (Zimmerman, 2008). Being able to choose and apply appropriate task related strategies may help these individuals learn faster because they are able to integrate new knowledge and skills more quickly.

Identifying the range of musically appropriate mental strategies beginners and intermediate level students adopt when learning to play an instrument has been a key concern of the first author in his work with beginning through to advanced level instrumentalists (McPherson, 2005). At the heart of this research is the search to understand what children are thinking as they solve various kinds of musical problems and how the sophistication of these task related mental strategies impacts on their overall skill development. In these studies children are typically asked to explain what they are doing in their minds in order to prepare for or complete a variety of tasks, such as performing music that they have rehearsed at home, sight-reading, playing from memory, playing by ear and improvising.

Importantly, this line of research suggests that many strategies concerned with learning to play an instrument are domain specific and therefore quite different to the strategies children would use to solve problems in other areas of their learning. This explains why

some children experience problems very early in their development, as they try to adopt a strategy from another area of their learning or an entirely inappropriate strategy to perform on an instrument (McPherson, 2005). As an example, in one study, the beginners were given a short piece of music to memorize, to assess their ability to process musical notation and perform this from memory once the notation had been removed. A variety of strategies were reported by the children, including many unmusical strategies such as starring at the notation to memorize the contour of the melody or inwardly saying the names of the notes of the phrase over and over to themselves. As an example, one beginner commented:

> I picture the notes in my mind. I take a photograph and keep it in my mind. That's what my mum told me to do with phone numbers.

In contrast, the more successful learners employed more sophisticated, musically-appropriate task strategies for each of the styles of performance very early in their development and as a result went on to achieve at a much higher level than their peers (McPherson, 2005). The best strategies children used for playing from memory and by ear, for example, were focused on what the music should sound like, and incorporated the physical actions required to produce the sound on their instrument. This was achieved through a type of mental practice where the instrumentalist worked holistically to sing and mentally 'play' through the piece while he or she was studying the score (for the memorisation tasks) or listening to the recording (for the ear playing tasks).

In a similar way, the highest achieving sight-readers were those children who took the most strategic approach, by making themselves aware of the finer details of the piece in the moments before they commenced playing. In a strategic fashion, they typically studied the first measure to get a feel for how the piece started and what tempo might be appropriate, identified the key- and time-signatures, scanned the music to identify possible obstacles, directed and maintained their attention throughout the performance in order to anticipate problems and to observe musical indications such as expression markings and articulation, and monitored and self evaluated their performance in order to correct errors (McPherson, 1994, 2005).

More broadly based strategies were also identified for children's rehearsal of repertoire they learn during their home practice (McPherson, 2005). In the study with our beginners, for example, the most successful learners were children who actively kept track of what they were learning by using a practice diary to take notes about what they needed to practise and how this might be accomplished. They also organized their practice sessions by focusing on the repertoire they needed to practise first in order to improve their playing before moving on to pieces they could already play or enjoyed playing (in contrast to children who organized their practice by playing for enjoyment first and improvement later).

Additional strategies included a more strategic approach to problems they encountered with the repertoire they were learning, such that better players displayed a more concentrated ability to refine their playing (e.g., "First I play it once and see how good I

am, then I practise it again and again until it's at a standard that I can take to my tutor"), in contrast to less capable musicians who reported inefficient task strategies (e.g., "I play my pieces through just once. I want to get them over with"). Finally, more strategic and capable players were also more inclined to self-diagnose and correct their playing (e.g., "I try to think about how my teacher played it, then go back over it slowly and then speed it up"). This is in contrast to poor learners who displayed virtually no evidence of being sufficiently motivated to try and improve their playing (e.g., "I don't try to fix it, I go through everything once") (McPherson, 2005, p. 18).

The quality of children's performance may also be directly related to the quality of their thinking when playing their instrument (McPherson, 2005). Unfortunately, by the end of the third year of learning, there were extremely wide differences between the children's performance abilities across the skills studied. Of particular importance is the finding that children who established *ear-to-hand* coordination skills very early in their development for aural forms of performance such as playing from memory and by ear, and *eye-to-ear-to-hand* coordination skills for visual forms of performance such as sight-reading, went on to achieve at the highest level and experienced far less problems with their learning compared to their less strategic peers (McPherson, 2005; McPherson & Gabrielsson, 2002).

Analysis of what the teachers were covering in their lessons and the types of books used in lessons suggests that many children were picking these strategies up implicitly, rather than through direct instruction from their teachers (McPherson, 1994, 2005). This point

reinforces the importance for children to be exposed to quality early experiences in music so that they establish not only proper playing habits, but develop their capacity to think musically as they learn to coordinate their eyes, ears and hands, and think in sound (Rostvall & West, 2003). It also highlights the need for instruction that more explicitly links thinking skills and task oriented strategies with actual physical performance, an element of learning that is often lacking in instrumental tuition.

<A> Engagement with the instrument

Without doubt, one of the most important parts of learning an instrument is the time and effort put into practising by children to develop their skills between lessons. Dictionaries define practice as involving repetition of exercises to improve and develop skill. But this limited use of the word practice, stressing the repetitive aspect of training, is far from suited to music (Hallam, 1997a). A better approach is to think of practice as encompassing the range of thoughts and behaviours that children engage in "that are intended to influence their motivational or affective state, or the way in which they select, organize, integrate, and rehearse new knowledge and skills" (Jørgensen, 2004, p. 85).

The key function of practice is to develop the internal memory representations necessary to understand and execute a musical task. This involves, as discussed earlier, various elements such as sight-reading, aural and physical skill and dexterity, coupled with a sense of musical time and intonation in order to bring cohesion and accuracy, in addition to knowledge of musical style and form. The ability to generate and use mental representations efficiently is critical to instrumental learning, and the degree to which

these representations have been acquired are clearly reflected in the learner's ability at any given point in time. Indeed, this is true of learning in any domain, where schematic knowledge is increasingly automated, allowing learners to recall mental representations quickly and effortlessly. Consider the following contrasting examples: a beginning piano student's mental representation of a piece of music might consist of a sequence of difficult and laborious fingering combinations, while a more advanced player might also represent the underlying chord progression along with some expressive information, some aural image of the sounds, and perhaps even a visual representation of how the score looks. Of course, the degree of knowledge and experience shapes the performer's goals and level of achievement (the child being far less fluent and expressive than an expert soloist, for example). So, one of the more important aims of practice therefore is for the child to acquire as much knowledge and experience as possible, in order to be able eventually to produce technically fluent and musically expressive performances of the literature he or she aims to play.

Generally, skilled musicians exert a great deal more effort and concentration during their practice than less skilled musicians, and are more likely to image, monitor and control their playing by focusing their attention on what they are practising and how it can be improved (Ericsson, 1997). In other words, they use current information to develop more sophisticated mental representations about music and how to perform it. Williamon and Valentine (1998) have demonstrated that these individuals are able to enjoy the more pleasurable aspects of practice (e.g., experimenting with phrasing, dynamics, and expressiveness) at the same time as engaging with the taxing requirements of dexterity,

co-ordination and so on. They therefore appear to be more intrinsically motivated. In other words, the challenges of acquiring technical skill are for the pleasure of the ultimate expressive ends.

<A> Developing self regulated practice habits

Studies with young learners show that their home practice is very different from the picture depicted above. As with any complex skill, it can take children years to develop to a level where their practice is efficient and effective. Unfortunately, many beginners have great difficulty moving beyond the overwhelming challenges of coordination. It is not surprising, therefore, that after the initial burst of excitement has worn off, practising a musical instrument can cause a mix of emotions for children, many of which may not seem particularly pleasant. These negative connotations are the reason why some teachers do not use the term "practice", preferring instead to talk about "music time" or "music play" as one way of refocusing this activity to try to make it more interesting and enjoyable for the student.

A growing body of research has helped us to understand some of the processes that young children adopt in their musical practice. In our study with young beginners, a large proportion of practice time (in many cases over 90%) was spent simply playing through a piece from beginning to end, without the child adopting a specific strategy for performance improvement (McPherson & Renwick, 2001). Barry and Hallam (2002) suggest that this is because beginners have not developed appropriate internal representations to identify and correct their own mistakes and are therefore not always

aware when they are going wrong. For the same reason, they also are unable to foresee the kinds of long and short-term practice goals that would help them to structure their learning in order to attain successful and rewarding experiences.

Hallam (1997a, 1997b) has undertaken studies that attempt to clarify the content of individual practice. Ranking student achievements, she has demonstrated that at the least successful level students focus their practice only on the early sections of the music, without completing the task. In the next level they play through the music without stopping to correct their performance. Following this, they stop when a mistake is made, but only to correct and repeat single notes in contrast to the next level, where short sections are repeated before they are able to practice larger sections. Finally, the most sophisticated practice occurs when students are able to play through the work to obtain a general overview before identifying difficult passages that can be isolated for more concentrated attention.

Definitions of effective practice should, according to Hallam (1997a), differ depending on the level of expertise acquired. Beginners need support in order to develop internal aural representations of music that they are learning and in their early stages of development repetition helps to develop the basic skills that lay a foundation for more advanced levels of skill development later on. Providing a variety of repertoire and pieces that the learner is already familiar with, plus repertoire that can be easily assimilated aurally can also help to motivate children to be more strategic with their practice. In this way, repetition may be an effective practice strategy for beginners who are trying to

assimilate a variety of complex skills. The adoption of more expert practice habits is probably therefore unrealistic, given the underdeveloped knowledge base of most beginners (Hallam, 1997a, 1997b).

Of critical importance in Hallam's (1997a) opinion, is the need for teachers to demonstrate and model the processes of effective practice, such as how to:

- obtain an overview of the work,
- identify difficulties,
- select appropriate strategies,
- work on sections and integrate them into a whole,
- monitor progress,
- set personal goals, and
- self evaluate progress.

According to Hallam (1997a), as students' expertise increases, they can be challenged to perform more difficult and more complex repertoire. As their overall mental representational skills develop, they will be more capable of reflecting on their own style of practice as well as how, and in what ways they can change their practice habits in order to produce better results. At this time also, they should be encouraged to develop their interpretative abilities, through listening, researching and analysing a broad range of music. Obviously, the quality of teaching plays an important facilitative role in making each of these facets of a musician's development possible.

Thus, in order to practice and so develop skills more quickly and effectively, students need to become "self-regulated learners" in the sense that they need to learn how to plan, monitor and control aspects of their own practice. This need is addressed by an approach known as *self-regulated learning*. This is why the first author's research over the past two decades has concentrated on the context-specific set of processes that children draw upon as they promote their own learning (McPherson & Renwick, 2011; McPherson & Zimmerman, 2011). The normal cycle of development occurs as children gradually acquire the knowledge required to be able to manage their practice and learning independently. Self-regulated learning processes in music may be characterised according to the following dimensions:

Motive: Vicarious or direct reinforcement by others leads to children being able to establish their own personal goals, reinforce their own learning and develop a sense of purpose and confidence in their own ability to perform.

Method: The strategies that children are taught or observe from others lead to them developing a repertoire of ways for dealing with problems in their playing and also the ability to self-initiate ways of practising that will enhance their development.

Time: Children's use of time is socially planned and managed through suggestions and reminders from others (such as parents and teachers) leading to them eventually being able to take responsibility for, plan and manage the amount of time they devote to their practice.

Behaviour: Performance is socially monitored and evaluated before children are able to self-monitor and evaluate their own progress.

Physical Environment:

The physical environment in which practice occurs (e.g., lounge/bedroom, use of music stand) is often structured by parents as a foundation for the child to eventually be able to control and shape the physical conditions in which they feel most comfortable practising.

Social: Support for practice is provided by significant others such as parents, teachers and peers who provide emotional and psychological support leading to the child being able to directly seek help by themselves.

<A> Practising to improve versus practising for fun

Another way of understanding why some children make rapid progress while others have difficulties or avoid practice is to examine the actual repertoire practised. Children can practice repertoire they need to learn for their teacher or the next performance situation as well as pieces they have already mastered and can already play. Some children even report a form of musical doodling: activities that are usually undertaken for the pleasure of the musical experience alone, rather than to refine specific skills.

Sloboda and Davidson (1996) report that high achieving learners tend to do significantly greater amounts of formal practice, such as scales, pieces and technical exercises, than their less successful peers. But the same learners also report more informal practice, such as playing their favourite pieces by ear, playing for fun or improvising. As reported

earlier in the section dealing with strategies for performing rehearsed repertoire, children who organise their practice by starting on the repertoire that they need to learn for their next lesson or upcoming performance before moving on to repertoire they enjoy and can already play tend to progress faster than children who organise their practice the other way around. However, children need to find a balance between these two elements – the discipline of practising to improve, versus the freedom of practising for personal enjoyment (McPherson, 2005). Both aspects of practice are extremely important and relate back to the motivational issues covered earlier: that musical progression is most efficient when learning involves a sense of individual empowerment such that the child enjoys and values learning and expects to become a successful musician.

We know also, that an important way of fostering positive motivation is to take advantage of the students' own individual goals, interests and self-perceptions. This was clearly apparent in another phase of our study where we analysed videotapes of a young child's practice to examine the efficiency of her practice when rehearsing repertoire assigned by her teacher as compared to pieces she chose to learn herself (Renwick & McPherson, 2002). The practice efficiency of repertoire she chose to learn herself was markedly superior to literature she had been assigned by her teacher with the result that she was able to connect to a more advanced stage of development, as she included more varied strategies into her practice such as silent fingerings, silent thinking and singing. These findings are consistent with other research showing that children who tend to be more cognitively engaged when practising, by thinking about what they are playing and actively trying to improve their playing, tend to be more motivated and do more practice

(McPherson & McCormick, 1999). A clear finding, however, is that allowing students choice in their repertoire can lead to positive improvements in their intrinsic motivation and task involvement (Renwick & Reeve, 2012). This highlights a major problem that occurs in much teaching: When students are always learning pieces that are selected by their teachers they may start to feel that they are learning these pieces to satisfy their teacher, rather than because they want to learn them. Obviously, in such situations, motivation and efficiency of practice will quickly diminish.

<A> Parental support

An important thread in the educational literature studies connections between the family and the environment in which a child receives instruction (McPherson, 2009). The socialization process is bi-directional because parents convey important messages to their children even though the level at which these messages are accepted, received and internalised varies between children (Grusec, Goodnow, & Kuczynski, 2000). More recently this literature has focused on two dimensions of the parent–child relationship: *parental practices* and *parental styles* (Spera, 2005). Parental practices refer to specific behaviours used by parents to socialize their children, such as helping with practice or by attending concerts. Parental styles are concerned more with the emotional climate in which parents raise their children and act to moderate the relationship between parenting practices and children's achievement. For example, parents who are authoritarian (i.e., strict, expect obedience and assert their power) when monitoring homework are more likely to inhibit their child's school performance, whereas parents who foster a mature attitude through bidirectional communication involving explanations of their behaviour

and encouragement of independence are more likely to facilitate their child's performance (McPherson, 2009).

An important area of research related to parental practices investigates how parents help their children acquire the necessary skills to complete their homework: by modelling the task as the child moves through the assignments, by direct instruction such as questioning and drill and practice activities, and by reinforcement through the use of praise and encouraging comments (Spera, 2005). If this line of research is compared to musical practice, it becomes clear that the only support parents can give to a child who is learning an instrument, especially if they do not play an instrument themselves, is the last of these categories.

The extent to which children rely on their parent's support and encouragement is evident in a number of studies on children's homework which show that very young children up to grade 2 or 3 tend not to view homework as their own responsibility (Warton, 1997). While young children may possess an understanding of the importance of doing homework as a means of improving their competence, they often fail to realise the importance of taking personal responsibility to initiate practice, preferring instead to rely on their parent's reminders (Warton, 1997). Many children therefore need constant support in the form of reminders and checking from both parents and teachers over a number of years before they can develop the self-regulatory competence needed to take personal responsibility to complete it by themselves. A critical related issue here is that these interactions—reminders, support, checking—need to occur in a way that supports

the child's sense of autonomy, rather than in a controlling or demanding way (Grolnick, 2009; McPherson, 2009).

We found very similar evidence in our study of young music learners (McPherson & Davidson, 2002), with one important exception. Whereas many parents will continue to remind their child to do his or her homework for however many years it takes, the support our children received from their parents, in the form of reminders and more general support for their musical practice, tended to drop off toward the end of the children's first year of learning – at the very time they needed ongoing encouragement to continue across the difficult period of adjusting to their instrument and gaining sufficient skill to continue into their second year of learning. Unfortunately, very soon after the children commenced learning, some of their mothers began to form judgements about their child's ability to cope with practice, as well as their own capacity to devote energy into regulating the child's practice through continual reminders and encouragement to practice. Many mothers tended to withdraw their reminders, often because they felt that the child was either not coping emotionally, believing that if the child was really interested he or she would do it anyway, or because they were unwilling to invest their personal time and effort into regulating their child's daily schedule. The overall impression we gained from these interviews was that some mothers had actually given up on the child as a potential musician much sooner that the child had come to feel the same way.

Like children, parents form expectations and values about their child's learning which subsequently impact on how capable they will be of helping their child to take

responsibility for his or her learning. Some of our parents reported very active participation, such as sitting with the child during practice sessions, being present to add support, or becoming involved in the parent-teacher committees at the school. In the early months of learning over 80% of the mothers reported actively reminding and encouraging their child to practice. But as for the children themselves, the beliefs the parents held about whether or not their child might be successful on the instrument were directly related to how much practice the children actually completed. Those mothers who expressed concerns that the child would need to be supervised in order to do sufficient practice, had children who went on to do significantly less practice than other children (McPherson & Davidson, 2002).

Some mothers had exigent standards and expected some sort of routine and a consistent approach to practice. Their children tended to flourish. In the homework literature (Hoover-Dempsey et al., 2001), parental-role construction has been found to link with parental involvement in children's education. The research seeks to understand why parents believe that they should be involved in homework, the extent to which they believe that their involvement will make a difference, and also whether they feel invited by teachers (or their child) to become involved. In our study, most of the parents felt that they should be involved, but because many parents had no previous musical experience, they were often hesitant to say or do too much for fear of interfering with the teacher-child relationship. Indeed, some had little idea about how to support their children's practice, with the result that they had a very unclear perception of their role as a facilitator of their child's learning. Others actively sought out information that they could

use to help their child, such as by attending lessons and ensemble rehearsals, or talking with the teacher to see how their child was progressing and how they could help overcome difficulties by assisting in the practice sessions.

Related to parental style were the interviews in our study that show the mothers had experienced times when they were frustrated with their child's attitude or approach to musical instrument learning. Sometimes these frustrations were on both sides, with the children expressing concerns that they were bored with their practice or did not know how to improve their playing, and the parent feeling frustrated that their child was not making sufficient efforts or they would argue with the child about practice. These displays of negative affect were especially evident in the post interview discussions we completed with parents and their children who had ceased instruction.

A key finding in the homework literature is that parents who stay positive when helping with homework are more likely to stimulate their child's motivation (Pomerantz, Wang, & Ng, 2005). While helping a child can cause all sorts of frustrations for a mother, it appears that if they are able to stay positive - even in the most frustrating and demanding situations - then their child is much more likely to persist and eventually become more motivated in school, as well as value and enjoy the learning process. This finding seems to have a special relevance for children's musical learning, because a parent's ability to put their own frustrations aside to help focus their child on what is enjoyable about their learning is probably one of the key elements in promoting motivation, persistence and ongoing musical involvement. In the homework literature there is convincing evidence

that parents' homework-involvement practices are directly related to children's learning, achievement, and the time they are willing to devote to their homework (Hoover-Dempsey et al., 2001; Spera, 2005). For musical practice, the results of our studies suggest a similarly strong relationship (McPherson, 2009; McPherson & Davidson, 2002; Sloboda & Davidson, 1996).

<A> Concluding Comments

It is clear from the literature reviewed in this chapter that children's learning of a musical instrument is shaped by many factors. Most important among these are the expectations children hold for becoming competent on their instrument, the enjoyment they experience when playing their instrument, the types of self-regulatory strategies they acquire to enhance their learning, and the support and encouragement they receive for their learning from their family, teachers and peers (McPherson et al., 2012).

Table 1 shows a number of age related principles of learning an instrument which we feel confident to propose, based on our understanding of the literature, our longitudinal studies with young musicians and our own teaching experiences. Our thoughts should not be considered as definitive, as children can vary markedly in both their interests as well as their mental, emotional and physical readiness to commence and continue learning.

--- Insert Table 1 here ---

Overall, the principles outlined in Table 1 are based on our view that initial experiences in music should involve opportunities for children to:

1. experiment with several instruments before selecting one;
2. test out the instrument in a number of contexts; and
3. consider what might be right both physically and expressively for them.

Later, in order to cope with the many obstacles involved with learning, young learners should be:

1. encouraged and supported in their learning but not forced to learn;
2. provided with ample opportunities to explore the value of instruments and the role that music learning and playing might have for them now and into the future;
3. inspired to set reasonable goals for themselves which provide a balance between their own skill level and the challenge required to master new repertoire and techniques; and
4. exposed to a learning environment that is highly structured with extensive opportunities for psychologically rewarding experiences, but that is also supportive of the child's autonomy—their increasing tendency to make decisions in relation to their identity and sense of self.

Learning a musical instrument can be one of the most enjoyable and rewarding hobbies or pastimes that a child can pursue. However, it can also be one of the most frustrating. With this in mind, teachers and parents need to understand better the many forces which impact on how children align music learning and playing with an ever more developing

sense of who they are. By surveying some of the literature related to these issues, we hope that this chapter has provided a basic framework for understanding some of the more important elements in this process.

<A> Reflective questions

1. What issues discussed in this chapter resonate with your own learning of an instrument?
2. What have you learned that might change your view of instrumental teaching?
3. How might you encourage a child who is starting to learn an instrument to take a longer-term view of his or her learning?
4. Given the significant role of parents, what can be done to make instrumental learning a three way interaction between teacher, learner and parent (and in what ways would this be important)?
5. How would you describe your own teachers' abilities to develop your motivation to learn an instrument?

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