

INSTRUMENTAL PRACTICE AND DEVELOPING MUSICIANSHIP

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ABSTRACT

Background. Interest in and amount of research on instrumental practice has increased in the last decade. More than half of all research on practice is published since 1990.

Aims. The aim of the paper is to present selected research results and theory developments in research on instrumental practice. This presentation addresses one issue where empirical research has expanded our knowledge of practice, i.e. on the relationship between time variables in practice and performance level. The second issue is the development of models and theories related to practice.

Main contribution. How does “time” enter practice as a variable, influencing instrumental achievement? Research has addressed three time perspectives: The initial starting age, i.e. the age when a child starts serious study and practice on their major instrument; the accumulated amount of practice at a certain time; and the amount of current practice. These time perspectives are studied in relation to performance level and achievement. In the last ten years, some of this research has been carried out within expertise theory. At some stage in the development of a research area, efforts to develop models and theories to structure and comprehend research results will emerge. Research on practice reached this level in the 1990s. Two models that address practice activity as a whole are presented, one based on a cognitive systems model, the other based on theories of didactics. In addition, four models for individual practice strategies are presented.

Implications. Implications for instrumental teaching and development are addressed for each issue

1. TIME AND ACHIEVEMENT IN PRACTICE

Research on time variables in practice and the relationship between time variables and instrumental achievement has, with some exceptions, emerged as a new issue in research on instrumental learning in the 1990s. This paper gives a brief overview over this research.

There are (at least) three time variables involved in instrumental development and in practising: age when lessons began on an instrument; amount of practice at one particular time or during a limited period of time; and the accumulated amount of practice from initial starting age to a present situation.

1.1. Initial starting age and later instrumental achievement

Research results. Looking back in history, Lehmann (1997) found that pianists and cembalists of historical importance, from Bach and Haendel to Arthur Rubinstein, by and large had started with lessons when they were 4 to 6 years old. There were exceptions with earlier starting age (Mozart and Rubinstein), and later (Debussy), but the main tendency was clear enough.

This tendency has also been found for concert pianists in recent times (Sosniak, 1985a). Conservatoire violin students were found to have started with lessons at 7.1 year, while internationally known violinists had a mean starting age of 5.1 year (Kopiez (1997). Kopiez also found that singers with an international career had a mean starting age with lessons of 8.1 year. An early beginning among accomplished youth or adult performers was also found by Manturzevska (1990), Linzenkirchner (1994), and Sloboda, Davidson, Howe and Moore (1996). And a study among conservatoire students showed a positive relationship between an early start with lessons and high examination grades after four years of conservatoire studies (Jørgensen, 2001).

These studies support a basic assumption in expertise theory, that the development of expertise requires at least *ten years of training*, and that training usually starts early.

On the other hand, many expert performers apparently started later than the mean values suggest. Kopiez, for instance, found that the professional singers with an international career were dispersed from 4 to 20 years for their first singing lessons. Jørgensen (2001) also found individual differences and students that started fairly late giving better performances than students with an early start on the same instrument.

Educational implications. Even if the general tendency is that an early start may be the road to expertise, an early start with lessons is neither a sufficient nor a necessary condition for later success. Young performers may engage in many activities that support (or hinder) development on their major instrument. Examples of transfer effects are: What about those who start playing on their own, may be several years before they get any formal training? Those who start on one instrument and later transfer to their main instrument? What about transfer from early piano experience to organ playing in later years? Transfer from electric bass to double bass? From saxophone to flute? And what about motivation: How does strong motivation for playing compensate for a relatively late start with an instrument?

These and other questions do not diminish the importance of research results that point to the general importance of an early start among instrumentalists that have reached a high level of accomplishment as adult performers. They do, however, remind us that the efforts and knowledge of both teacher and pupil are of decisive importance.

1.2. Accumulated practice time and instrumental achievement

Research results. The accumulated amount of practice from initial starting age to present situation is apparently a significant variable in the determination of expertise. Firstly, those who have reached a high performance level have gradually increased the frequency and amount of practice as they grow older (Ericsson, Krampe and Tesch-Römer, 1993; Sloboda and Howe, 1991; Sloboda *et al.* 1996; Sosniak, 1985a; 1985b).

Secondly, those who have reached a high level of expertise as adults have apparently accumulated a large amount of practice time over a period of 10-15 years before they reached this level. The pioneer research on this issue was presented by Ericsson *et al.* (1993), in a study of violin students in a German Musikhochschule. Comparing the “best” violin students with the “good” violinists, they found that, at the age of 18, the best had accumulated an average of 7410 hr of practice, while the good violinists had accumulated an average of 5301 hours.

Educational implications. The obvious educational implication is that teachers must keep an eye on frequency and amount of practice among their students, if these students are to accumulate a sufficient amount of practice hours before they enter higher music studies with an ambition to become a professional musician.

1.3. Amount of practice and achievement

Research results. Research on the relationship between amount of practice at one particular time (or during a limited period of time) and the achievement at this same period has addressed young beginners on brass instruments (Zurcher, 1975); youth aged 14-21 on several instruments (Linzenkirchner, 1994); children and youth aged 6-16 on violin and viola (Hallam, 1998); children and youth aged 8-18 on a broad array of instruments (Sloboda *et al.*, 1996); children aged 6-10 on several instruments (O’Neill, 1997), children, youth and adults from under 11 to more than 24 on piano (Williamon and Valentine, 2000), conservatory students on violin (Ericsson *et al.* 1993) and on a broad array of instruments (Jørgensen, 2002). Some of them show a positive, mostly low, correlation between amount of practice and achievement at a certain point of time, while others do not find any relationship at all.

There may be several explanations for this diversity of results. First of all, it is difficult to obtain reliable and valid measures of amount of practice. Secondly, the different age groups and levels of expertise included in the studies may also explain why the results are different from study to study. It is, furthermore, important to distinguish between time used to influence general performance level, and time used to influence performance level on a specific piece of music. It is reasonable to expect that the relationship between a *general level* of performance and

quantity of practice is stronger than the relationship between the performance of *one* composition and quantity of practice on this composition. This is, so far, what is mostly predicted by research.

Educational implications. The most obvious educational consequence is to recommend students to practice as much as possible, but this is too generally stated. Advice on amount of practice must take into account differences in age groups and differences between instruments (Jørgensen, 1997, 2002). Then we have the question of a “how much is enough”. Research results (Jørgensen, 2002) and educational experience tell us that the practitioner has to exceed a *lower limit* of amount of practice if we are to expect progress. Conversely, those who invest a very high amount of time in practice may experience that their progress is minimal, in accordance with the “monotonic benefits assumption”, that the relative gains get smaller as skill and effort increase (Krampe and Ericsson, 1995). The question of “how much is too much” is also open for research.

1.4. Time and achievement: a summary

The statement by Sloboda *et al.* (1996) that “We believe that we have established, beyond any reasonable doubt, that amount of relevant practice is a key variable in determination of music performance expertise”, is apparently relevant for the general development of an instrumentalist. Then we have to take into account that time is a threefold entity, as shown in figure 1.

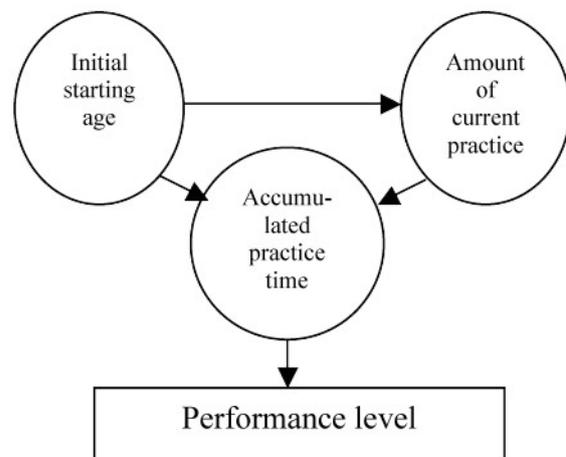


Figure 1: Relationship between three practice time variables and performance level

The figure is a summary of research on time variables in practice, but the strength of the variables and their relationship is still undetermined by research. And we have to remember that these variables are embedded in an intricate web of personal and social variables, all of them influencing performance. Among them is the quality of instruction received (*cf.* Davidson, Moore, Sloboda and Howe, 1998), differences in repertory and use of practice strategies (*cf.* Nielsen, 1999), differences in motivation and aspirations (O’Neill, 1997) etc.

2. MODEL AND THEORY DEVELOPMENT

At a certain stage in the development of a research area, efforts to develop models and theories to structure and comprehend research results will emerge. Research on practice reached this level in the 1990s. In 1997, two models that attempted to describe the complexity of factors affecting practice outcomes were presented.

2.1. Hallam's model on practising

Hallam (1997) presented a model on practising based on a "cognitive systems" model of *learning*, see figure 2.

Hallam's model takes into account what the learner brings to the practising situation; the characteristics of the learning environment; the demands of the particular learning tasks; the processes involved in practising, their effects on learning outcomes; and the interactions between these variables. Learner characteristics

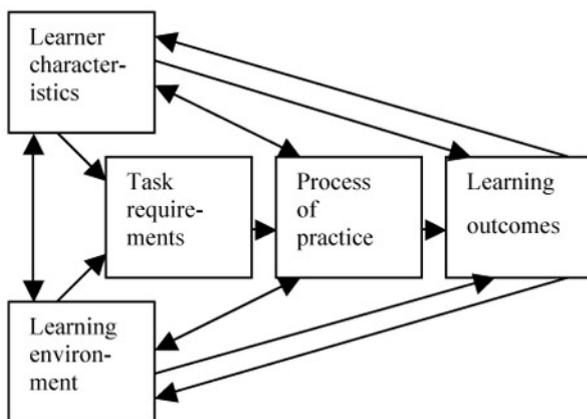


Figure 2: Hallam's model on practising

2.2. Jørgensen's model on practising

The second model (Jørgensen, 1997) is based on the 1965-version of the didactic theory of Wolfgang Schulz. The rationale for using this *model of the structure of teaching* as basis for a model of *practice* is that we can look at practice as *self-teaching*. All formal teaching has a *structure*, where the teacher, firstly, has to take into account certain *conditions* that restrict or open opportunities for the teaching situation. In the present model, these are individual characteristics of the practitioner (gender, age, motivation etc.); the instrument (different instruments pose different physical and psychological challenges); and social aspects of the practising situation (if, for instance, the practice is carried out within an institution, there are several aspects of institutional life that influence the conditions for practice). These conditions are either non-changeable (i.e. gender, age), or may be influenced over time (i.e. motivation).

The second element comprises areas that invite choice between several opportunities. *Decision areas* are the aim of the practice activity (intentions); the content of the activity (very often, intentions and content are interwoven and difficult to separate); the media used (the tools and resources used in addition to an instrument); the practice strategies; and time.

The third element, not included in Schulz's 1965 model, is achievement level. Figure 2 gives an illustration of the model.

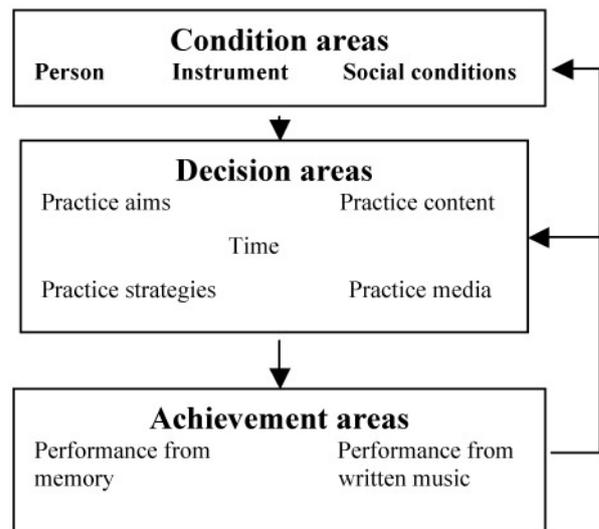


Figure 3: Jørgensen's model on practising.

The two models are dynamic models, designed to take account of practice at all levels of expertise, and they include the same major elements of a practice situation. Their main difference is in choice of theoretical basis. Theoretically, Hallam's model relates to learning, while Jørgensen's model relates to (self-) teaching. Consequently, Hallam's model will direct our attention to theories and research on learning when we want to place the model in a broader context, while Jørgensen's model directs our attention to theories and research on teaching.

Educational implications. In an educational setting, these models may be used in teaching practising. To teach beginning instrumental students to practise is an important task for the teachers, a task that many of them don't do with sufficient strength and success (Jørgensen, 2000). Even many students in higher music education are dissatisfied with their practising (ibid.). Hallam's model has, so far, successfully been used as a framework for an overview of research literature, while Jørgensen's model has mostly been used in teaching practice behaviour to advanced instrumental students. For these students, the self-teaching metaphor has proved to be readily accepted and utilised.

2.3. Models for individual practice strategies

Research on individual practice strategies have, too, developed to a level where there has been presented several models to identify and integrate different types of strategies. Within the (self-) teaching metaphor, Jørgensen (in press) emphasises that the practice *process* includes three self-teaching activities: *planning and preparation of practice*, *execution of practice*, and *observation and evaluation of practice*, as well as *metacognitive* activity, where the practitioner uses her repertoire of strategies, and monitor and control use of strategies.

An alternative to the self-teaching metaphor is the *self-regulation* metaphor. McPherson and Zimmermann (2002) have presented a model for *self-regulated learning* as an open-ended cyclic process that occurs in three phases: forethought, performance/volitional control, and self-reflection.

Concentrating on the *executive phase* of the practice session, Nielsen (1999) presented a classification of strategies based on a study of two organists. She identified “primary” strategies, where the aim was to select, organise and relate the learning material in the practice session, while “secondary strategies” took care of attention, anxiety and efficient use of time within the session.

Lastly, Lehmann and Davidson (2002) presented a model for strategies concerned with *mental representations*. The model included desired (goal) performance, production (motor) aspects and current (ongoing) performance.

Educational implications. All of these models may help teachers in their efforts to teach practising, and practitioners to sort out the major elements in practice, and reflect on their own practice on the basis of this knowledge.

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