Aptitude and Audiation: A Healthy Duet

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Although the term "music aptitude"[9] has been in use for almost 100 years and the term "audiation"[8] was coined less than 15 year ago, most musicians are uncomfortable with the use of both terms. That is unfortunate, because without a specific understanding of music aptitude and audiation, and of how they interact, an understanding of why and how we learn when we learn music becomes elusive. The following explanations of the two terms, and their implications, should be of particular interest to anyone who teaches music, and of general interest to anyone who is concerned with music at all. Though audiation is fundamental to music aptitude, an understanding of the two terms is acquired best with an initial understanding of music aptitude.

Music Aptitude

Music aptitude is the basis of music achievement. Music aptitude is the potential to learn music. Music achievement is what has been learned. It may be assumed that if a person has a high level of music achievement, he will also have a high level of music aptitude. The reverse, however, is not true. Approximately 50 percent of students in kindergarten through senior high school whose music aptitude is in the upper fifth unfortunately demonstrate little or no music achievement.

The unique roles of music aptitude and music achievement become confused when words such as "ability," "talent," "musicality," "giftedness," and "musicianship" are used. The reason is that such words do not distinguish between music aptitude and music achievement. When the two words are combined or considered synonymous, clear thinking about music development and music instruction becomes almost impossible.

Many musicians have thought about the source of music aptitude but few have thought about it seriously. Though they may not admit it, fearing that they may be accused of being old-fashioned, most musicians intuit that music aptitude is innate, that environment has at most only a minimal effect on music aptitude. That belief is certainly evident in admissions committees of schools of music and conservatories. Students seeking matriculation are assessed on their ability to perform or compose. Whereas admissions committees are correct in assuming that a high level of performance indicates high levels of music achievement and music aptitude, they are not correct in assuming that a low level of performance indicates a low level of music aptitude. Although a low level of performance is indicative of a low level of music achievement, a low level of performance is not necessarily indicative of a low level of music aptitude. As a result of a lack of knowledge of the nature and potency of music aptitude and how it might be assessed, some students are denied music instruction even though their potential to achieve in music may actually be greater than that of other students who receive instruction. Such a waste of human potential is both unethical and immoral.

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It is true that all children are born with an aptitude for music. Few are born with high or low music aptitude. Some are born with above average or below average music aptitude. Many are born with average music aptitude. Whether children retain the level of music aptitude with which they were born depends upon the quality and quantity of the informal and formal music instruction that they receive in and out of the home before they enter school. With an inadequate music environment to sustain it, the level of music aptitude a child is born with decreases. Even with an appropriate music environment, a child's level of music aptitude will not exceed that with which he was born. The need for an appropriate music environment during a child's formative years cannot be overemphasized.

At approximately age nine, a child's music aptitude ceases to be developmental,[6] that is, there is no longer the opportunity to prevent a child's music aptitude from decreasing as a result of an inadequate early music environment. No longer is his music aptitude a product of the interaction of his innate potential and early environmental influences in music. The level of a child's developmental music aptitude at approximately age nine becomes his level of stabilized music aptitude throughout his life.[4] After that time

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a child can achieve in music no more than his level of stabilized music aptitude will permit. Thus a teenager or college student with high stabilized music aptitude and low music achievement will, with appropriate instruction, ultimately achieve a higher level of music achievement than will a teenager or college student who initially demonstrates a high level of music achievement but possess a low level of stabilized music aptitude.

One of the characteristics of music aptitude has already been alluded to. It is that music aptitude, like height and weight, is normally distributed in the population at large. Another characteristic is that music aptitude is multidimensional. There is more than one type of music aptitude. Overall music aptitude includes tonal aptitude, rhythm aptitude, and creative aptitude to name but a few. Moreover, each of those aptitudes has two or more subparts. For example, tonal aptitude includes melodic aptitude and harmonic aptitude. Rhythm aptitude includes meter aptitude and tempo aptitude.

IQ has little to do with music aptitude. The median product-moment correlation coefficient that describes that relationship is .20. Those with superior levels of music aptitude may have high or low or average IQs and those with superior IQs may have any level of music aptitude.

Audiation

The most important characteristic of music aptitude as well as music achievement is audiation. In order to explain the phenomenon, the verb "to audiate" had to be coined. Audiation takes place when one hears music silently, that is, when the sound is not physically present. In a more technical sense, audiation may be defined as the non-aural sensory perception and processing of musical experiences. One may audiate in listening to music, in recalling music, and in creating and improvising music. In contrast, aural perception takes place when one hears music when the sound of which is physically present. Both audiation and aural perception take place when one is listening to music. Without audiation, what is aurally perceived cannot be given musical meaning. Although the term "aural imagery" rather than "aural perception" is sometimes used to describe the audiation process, it is not satisfactory, because the word "image" is associated with the visual, not the aural, sense. To use the word "imagery" is to suggest the audiation of music which is seen in notation. The term "notational audiation" is more appropriate than "aural imagery," and further, the distinction between audiation and notational audiation is clear. Notational audiation takes place when one hears music seen in notation when the sound is not physically present. One may notationally audiate by reading, writing, or composing music.

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Immediate impressions of and intuitive responses to music represent audiation in music aptitude. Such audiation may be initiated by nothing more than simple exposure to music or informal instruction in music. Directed listening to music, reading music, notating music, recalling music, creating music, and improvising music, all of which are types of audiation, represent audiation in music achievement.

Stages of Audiation

Stages of audiation are not so easy to describe. The stages of audiation when one is listening to music are not unlike the process of thinking when listening to someone speak. The following is a simplified example of the hierarchical nature of the five cyclic stages of audiation that occur when one listens and gives meaning to traditional music.

1. Sound is perceived.
2. That sound is organized into tonal and rhythm patterns within a tonality and a meter.
3. Those patterns are retained in audiation as more sound (the next passage in the music) is perceived.
4. As those patterns are retained in audiation and more sound is perceived, patterns that were heard in other pieces of music at other times are recalled through audiation for purposes of assessing, clarifying, and modifying the patterns that are being audiated in the music at hand.
5. As patterns in the music are retained in audiation, as more sound is perceived, and as patterns that were heard in other pieces of music are being audiated, predictions are being made about the patterns that are still to be heard in the music at hand.

Admittedly, the foregoing discussions of music aptitude and audiation are brief. It is hoped, nonetheless, that they have served to make clear the important roles of music aptitudes and audiation in music instruction. When the music aptitudes and audiation skills of a student are not given the attention that they deserve, both medical and musical problems are likely to occur.

Potential Medical Problems

Let us first consider a potential medical problem. If a student is not given a music aptitude test to diagnose his musical strengths and weaknesses before he receives any type of music instruction, the teacher will not have the necessary objective facts to verify his subjective opinions about the musical potential of the student. The teacher will not be adequately prepared to adapt instruction to the individual musical needs of the student. Perhaps a student who is studying an instrument has a high tonal aptitude and a low rhythm aptitude. If the teacher is unaware of that student's aptitude profile, the teacher may treat that student as if he has average overall music aptitude. In that case, the student will probably become frustrated when he attempts to learn rhythmic aspects and bored when he is unnecessarily required to perform repetitions of tonal aspects of the music that he is being asked to learn. It would seem that such a situation would stimulate, at the very

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least, motivational and other psychological problems for the student. It is not unreasonable to think that, because the student cannot audiate rhythmically that which he is being asked to perform, he might develop tensions which might culminate in muscle restriction.

Moreover, suppose that a student has low tonal aptitude, low rhythm aptitude, and low expressive aptitude. His chances of becoming a successful professional musician are certainly limited. Should he nonetheless be compelled by a dominating and intimidating parent to study a musical instrument, and be forced to practice on the instrument for several hours a day? Should he be punished by being denied recreational activities because he does not satisfy the demands and standards of his teacher? Consider the effect such behavior may have on the student during pre-adulthood as well as during adulthood. The student may ultimately dissociate himself from the comfort that music might have offered him avocationally as an adult. Think of how positive the student's attitude might have become if his music aptitude had not been concealed but rather revealed through the objective results of a valid music aptitude test. A well-informed teacher demonstrates judgment and compassion when using the results of a valid music aptitude test as an objective aid. A poor teacher relies on subjective judgments and uses an invalid music aptitude test to prove his opinions.

Tests to Measure Music Aptitude and Audiation. Just as there are developmental and stabilized stages of music aptitude, so there are specialized tests to measure developmental and stabilized music aptitudes. The *Musical Aptitude Profile*[3] is the only currently published test that may be used to measure stabilized music aptitudes. The *Primary Measures of Music Audiation*[4] and the *Intermediate Measures of Music Audiation*[7] are the only tests that have ever been published that may be used to measure developmental music aptitudes. All three test batteries have consistently demonstrated substantial validity through a series of longitudinal predictive validity studies, each of which was over a period of two to five years. Information on all technical aspects of the batteries may be found in the test manuals. Major validity and reliability studies are described in the test manuals. Other studies are noted in the bibliographies.

Potential Musical Problems

Teachers' and parents' lack of understanding of music aptitude probably causes musical problems before it causes medical problems such as those alluded to above. Musical problems may also arise as a result of a lack of understanding of audiation, particularly on the part of teachers.

Consider, for example, teachers who teach students to perform on a musical instrument. Typically teachers are concerned only with teaching the technical skills that are needed to play an instrument. They do not realize that every student must learn two instruments: the physical one that he manipulates with his body and the one that is in his head (his audiational instrument). If a student cannot audiate a passage that he is going to play before he attempts to play in on an instrument, he will probably play the passage with poor intonation. Moreover, he will probably play the passage with poor rhythm. It is not possible for one to play a non-keyboard instrument with any better intonation than that with which he sings. Nor is it possible for one to play an instrument with any better rhythm than that with which he can move his body rhythmically. If a student is unable to audiate, audiational skills and technical skills must at least be taught concurrently in order for him to become a successful performer. Audiation skills are learned through the aural/oral process of singing and moving, on the one hand, and listening and feeling, on the other.

Think too of the number of students who are expected to learn to read notation before they have learned to audiate. That is like asking a student to read a language that he cannot understand. To ask one who does not audiate to read music notation on an instrument is like asking one to type a manuscript in a language that he cannot understand. Music reading truly takes place when one brings audiation to the notation and not when one tries to take theoretical information from the notation.

Conclusion

The goal of music instruction is, of course, music achievement. Both musical and medical problems may occur when the goal is merely the process. The process of music instruction should be to teach audiation skill as a readiness for teaching performance skill and reading skill. And the most appropriate and efficient way to teach all three skills requires first the objective measurement of a student's music aptitudes. Those sequential steps form the foundation of music learning theory.

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