

focus on actual, identifiable individuals. This is even more important because the act of creating music is most of the time a much more complex, unstable undertaking. In addition, as stated by J.-F. Lyotard, "composers today have the feeling that everything is possible and that they must invent for each work not only its musical form, but the rules of the music." According to Arthur Danto, the same situation is true for producers and recipients of music:

So the contemporary is, from one perspective, a period of information disorder, a condition of perfect aesthetic entropy. But it is equally a period of quite perfect freedom. Today there is no longer any pale of history. Everything is permitted.

In this situation, many turn to the person of the author for guidance and criteria of judgment. Last but not least, the romantic ideal of an artist creating something personal and original is simply a narrative that has kept its attractiveness. And the stream of works and performances of music that own the power to evoke this impression has fortunately not yet run dry, despite the talk of crisis in all areas of Western music.

Frédéric Döhl
Freie Universität Berlin

See Also: Copyright, Defined; Copyright Law; Intellectual Property; Recording Industry.

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Autism Spectrum Disorder

Autism is a lifelong, neurodevelopmental condition that affects around one in 100 people, typically resulting in impaired social interaction and communication, repetitive patterns of behavior, and narrow ranges of interest. For many people on the autism spectrum, music appears to be particularly important as an art form in its own right, as both a source of aesthetic pleasure and (for some) a creative outlet, as well as having the educational and therapeutic potential to promote wider learning and development and to foster a sense of well-being. Around one in 20 of those on the spectrum have unusual musical abilities, particularly absolute pitch (the capacity to recognize or reproduce notes in isolation from others), which, if nurtured in the early years, can lead to exceptional musical achievement. A small group of autistic people who have severe learning difficulties nonetheless become expert musicians and are known as savants.

Autism

Autism was first identified by the American psychiatrist Loe Kanner in 1943 and the Austrian pediatrician Hans Asperger in 1944. It is a lifelong neurological condition that manifests itself early in childhood. Its effects can be profound, pervading a person's whole development. It is defined by the World Health Organization (WHO) and the American Psychiatric Association (APA) in terms of three broad characteristics: qualitative impairment in social interaction; qualitative impairment in communication; and restricted, repetitive, and stereotyped patterns of behavior, interests, and

activities. Since the 1990s, three theories have dominated the thinking about the causes of autism, each of which has been associated with one of the main characteristics of the WHO/APA definition.

The notion of deficient “theory of mind”—the ability to attribute mental states to oneself and others, and to understand that others may have ideas that differ from one’s own—is held to be responsible for impairment in social interaction. “Weak central coherence,” which is the tendency to think about things in terms of their parts rather than as a whole, is linked to communication difficulties (as well, more positively, as accounting for enhanced perceptual detail and some “savant-like” abilities). “Executive dysfunction”—a problem with the domain of processing that regulates and controls other cognitive functions—is thought to lead to rigid and repetitive behaviors. However, it has not proved possible to attribute autism to any one area of functioning in the brain, and diagnoses are made solely on the basis of observable behaviors. The autism spectrum is very broad and includes many people who have additional needs, including learning difficulties and mental health issues. As the understanding and awareness of autism has improved, so the rate of identification has increased, and it is currently thought that, in developed countries, the incidence may be somewhat greater than one in 100 people.

Musical Abilities and Autism

It has been observed that many people with autism have a particular affinity for music, with a rather smaller proportion (around one in 20) having special abilities, notably “absolute pitch.” It is not known for sure why this should be the case, although an obsessive early interest in the perceptual qualities of things, over and above their functional importance (in the case of everyday sounds) or semantic significance (in the case of spoken language) appears to be a key factor. There is evidence, too, that for some youngsters on the autism spectrum, many nonmusical sounds are processed in a musical way. For example, autistic children may be intrigued by the noises made by certain items of domestic equipment, such as tumble dryers, microwaves, and vacuum cleaners, which are rich in harmonics. They may flick resonant objects (such as drinking glasses and metal railings) and be fascinated with their bell-like resonance. And they

may attend to the sounding qualities of speech, rather than focusing on the meanings of words. At the same time, the speech of those with severe autism may be to differing degrees “echolalic,” whereby words and phrases are repeated without apparent understanding. Here, it is as though the grammar of music (which is reliant on repetition) is being used to structure language. Such behaviors may well be signs of latent musicality. It is interesting to note that absolute pitch typically emerges around the age of 24 months, the time at which language acquisition usually takes off but may become derailed in children on the autism spectrum; Adam Ockelford’s work has shown that for some autistic individuals, music can function as a proxy language.

Music Education for Children on the Autism Spectrum

Despite the affinity for music displayed by many children with autism and, in a minority of cases, unusually advanced aural skills, very little research has been undertaken into what may constitute effective music education strategies for teachers working with pupils and students who are on the spectrum. As a consequence, it appears that a large proportion of autistic children—particularly those with learning difficulties or very limited verbal communication—are not being offered optimal music curricula. All too often, musical potential is not recognized amid a welter of behaviors that may disguise a child’s true level of musical interest or ability. For example, an acute sensitivity to sound (evidenced by placing the hands over or fingers in the ears) may be misunderstood as an aversion to music, rather than a dislike or even fear of the pieces that others have chosen to be in the environment at a particular time. However, by initially employing child-centered music pedagogical strategies, it may well be possible for a child to accept and enjoy a wide range of musical genres and styles and to engage willingly in active music making with others.

Using Music to Promote Wider Development and Well-Being

Participation in musical activities is likely not only to be beneficial in its own right, offering access to an important part of a child’s cultural heritage, but also to afford a creative outlet and a means of

self-expression. There is evidence that young people with autism experience emotional reactions to music in much the same way as those developing neurotypically, and involvement with music may help autistic children to understand their feelings and those of others in a "safe space." This is very much the province of music therapy—now a widely accepted approach in working with young people on the autism spectrum that was pioneered by Juliet Alvin in the United Kingdom (UK) in the 1960s. Music educators, too, can use songs and other material to support the acquisition of language and social skills, such as turn taking and listening to others. Abstract concepts, including number and time, can also be introduced and reinforced through musical activities.

Notable Autistic Musicians

Given the nature of the autistic mind, with its proclivity for focusing on perceptual stimuli (including sound), its love of repetition and regularity (key features of musical structure), and its tendency to engender introverted, obsessive behavior (potentially driving an individual toward the thousands of hours of practice required to develop high-level musical expertise), it is hardly surprising that some autistic people, notwithstanding the social challenges they have faced, have risen to figure among the contemporary international musical elite as performers and composers.

For example, the New Zealand singer-songwriter and multi-instrumentalist Ladyhawke (Phillipa Brown) and the American singer and guitarist James Durbin both have diagnoses of Asperger syndrome (a form of autism in which linguistic abilities are unimpaired), and the Japanese composer Hikari Oe, in addition to being on the autism spectrum, is visually impaired and developmentally delayed.

The Irish psychiatrist Michael Fitzgerald has made retrospective diagnoses of autism in prominent figures from the past, including the composers Wolfgang Amadeus Mozart, Ludwig van Beethoven, Eric Satie, and Béla Bartók and the Canadian pianist Glenn Gould.

Autistic Savant Musicians

A subgroup of people on the autism spectrum who have learning difficulties, but notable abilities in one defined area or more, are known as

"savants"—a term coined by Dr. J. Langdon Down in a lecture to the Medical Society of London in 1887 to describe patients who had "special faculties" in the context of cognitive impairment. Contemporary interest in the syndrome was prompted by the work of Darold Treffert in the latter part of the 20th century, who brought a number of American savants to public attention, including the pianist Leslie Lemke. In fact, musicians make up about two-thirds of all known savants. By and large, they play the piano (for example, Matt Savage in the United States and Derek Paravicini, who is also blind, in the UK), although some have mastered other instruments, too.

The preference for a keyboard instrument is thought to be due to the immediacy with which musical sounds can be made—crucial in the early stages of learning, which savants tend to initiate themselves. It used to be thought that savants were so strongly autodidactic that they were incapable of being "taught," although the work of Ockelford with Paravicini and others has shown that this is not the case. A feature of all savants is a prodigious memory, and Paravicini regularly performs concerts devoted largely to requests from the audience. He has tens of thousands of pieces available to him that he can play without rehearsal, in any key and in a wide range of styles, within which he can improvise with panache to create distinctive and original material.

Adam Ockelford
University of Roehampton

See Also: Achievement, Musical; Applied Musicology; Blind Musicians; Language Disorders; Music Therapy; Repetition; Special Needs; Theory of Mind.

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Automaticity

Automaticity is crucial to the processing, re-creation, and creation of music. Automaticity occurs when actions can be carried out without conscious awareness. Automatic processes require minimal attention and are carried out effortlessly. They include such activities as walking, riding a bicycle, driving a car, talking, typing, listening to music, and playing a musical instrument. The automation of such activities frees up mental resources for higher-order processes, for instance, focusing on destinations, monitoring current traffic conditions, the content of conversations or what is being written, or creating the desired interpretation of the music. Once an activity is automated, it is undertaken smoothly and in a highly efficient manner, is resistant to change, and is not disrupted by other activities.

New skills initially require high levels of conscious control while highly practiced activities become automated. The level of automaticity of activities can be viewed as being on a continuum. As more experience is gained in an activity, it moves from the controlled end of the continuum toward the automatic end. Once a skill has become automated, it is very difficult to access its operation consciously. Attempting to do so can be very disruptive. This has been described as "the centipede effect," based on the fable in which a toad asks a centipede how it walks. Asking the centipede to reflect on the walking process serves to immobilize it.

The Development of Automaticity

There are generally considered to be three phases in skill learning: cognitive-verbal-motor, associative, and autonomous. In the cognitive-verbal-motor-stage, learning is largely under cognitive, conscious control. The learner has to understand what is required to undertake the task and carries

it out while consciously providing self-instruction. In the associative stage, the learner begins to put together a sequence of responses that become more fluent over time. Errors are detected and eliminated. While learning to play an instrument, feedback from the sounds produced and the teacher play an important role in the process. In the autonomous stage, the skill becomes automated, is carried out without conscious effort, and continues to develop each time it is used, becoming more fluent and quicker. In musical performance, many skills are acquired simultaneously, and new skills constantly being added. As mastery of more advanced skills is acquired, skills learned earlier are continuously practiced so they achieve greater automaticity. As one set of skills is becoming increasingly automated, others are at the associative and cognitive stages.

For virtually every task, performance improves with practice, with the greatest improvement occurring early in training. Associations developed through practice are strengthened. There is some evidence that in the long term, skills can plateau before continuing to improve. There may be gradual improvement through association up to a certain point, but to gain greater efficiency beyond this point may require a change in processes. This may be linked to what is known as "chunking" when processing is carried out with ever-larger groups of elements. For instance, in reading musical notation, skilled readers do not fixate on each note; their fixations are directed across line and phrase boundaries, scanning ahead and returning to the current point of performance. They can continue to read about six or seven notes after removal of the printed page, while poor readers only manage about three or four.

The increasing levels of automaticity acquired as expertise develops in a field are not always advantageous. Increasing levels of expertise can lead to overconfidence, inflexibility, and rigidity. The inaccessibility of automated processes to conscious awareness can also be problematic if changes are required or if it is necessary to explain the processes to someone else.

Musical Enculturation

The processes that underpin learning in music are part of the natural learning processes that are common to all human beings. When people listen