Don't throw out the baby with the bath water

Bruce Torff and Ellen Winner look at the role of innate factors in musical accomplishment.

ECHOING controversy in other domains, debate rages in the developmental psychology of music concerning the extent to which musical skill is attributable to innate or environmental factors. Sloboda, Davidson and Howe argue strongly against innate factors. They decry the 'folk psychology' prevalent in Western society which attributes the uneven distribution of musical ability to individual differences in underlying innate musical 'talent'. Rather, the authors claim, the 'mental capacities underlying musical ability are more widespread than commonly thought, and social and environmental factors can account for very wide differences in musical accomplishment' (p.349).

We agree with the authors that the folk psychology of talent is inaccurate and has had certain pernicious repercussions in music education. Typically, subjective measures of assessing musical ability form the basis of decisions to focus educational resources on those deemed talented, excluding students who may possess musical abilities untapped by the assessment measures.

But the authors have gone too far in the opposite direction. They give excessive credit to experience, exposure, and practice, and virtually deny the importance of inherited differences in musical aptitude. While we agree that a belief in talent to the exclusion of environmental factors is wrong, we find it equally wrong to deny the important role of innate ability in musical accomplishment. Have Sloboda et al. thrown out the baby with the bath water?

Sloboda et al. advance eight arguments in support of their view that environmental factors account for all major differences among individuals in musical accomplishment. We first discuss each of these arguments, and then consider the kinds of evidence that would bear on the claims made by Sloboda et al.

1. The authors hold that high achievement is not in itself evidence of innate talent. According to this argument, all that is required for exceptional performance in a domain is a belief that one is gifted. Such a belief, they argue, leads to the kind of confidence that is in itself enough to lead to mastery.

The authors base this claim on the fact that self-beliefs are better predictors of achievement than IQ differences (Dweck, 1986). However, IQ differences are known to be indifferent predictors of success in anything besides school performance (e.g. Gardner, 1983; Sternberg, 1977). To substantiate their claims, the authors would need to call upon evidence showing that self-beliefs in one's musical ability are better predictors of high performance in music than are legitimate tests of musical aptitude. We doubt that the evidence would support their claims. Moreover, we suggest that individuals do not normally come to believe they are gifted in music (or any other domain) unless they find learning easy and enjoyable and notice that they make progress above and beyond that of other individuals - i.e. unless they in fact have an above average talent in the domain.

2. The authors use the indisputable fact that in some cultures musical skill is more widespread than in others to reject the hypothesis that musical skill depends largely on innate differences. However, this conclusion does not follow. All that we can conclude is that individuals in our culture do not fulfil their potential. We think that this is undoubtedly true, not only in music but in all areas of expertise. However, this does not mean that there are no large inherent differences in individual potential. The fact that we can all perform in some domain at a higher level than we do does not mean that we can all reach the same level. The same is true of a physical trait like height: with different nutrition we could all be taller, but some of us would still be much taller than others.

3. To make the claim that we all have the same inherent musical abilities, the authors argue that ordinary Western children have receptive musical skills equal to those of musically trained adults. The evidence for this is that by the age of 10, most children can judge which of two passages conforms to the rules of tonal harmony. Similarly, we know that ordinary children can make fine discriminations among painting styles. Would we want to conclude from this that we can all be Picassos? Surely not. High levels of expertise in music (or art) require much more than such fairly low level receptive abilities, such as, for music, the ability to respond to subtle shifts in key, the ability to recognize musical forms, etc.

4. The authors make the surprising claim that successful musicians do not display musical precocity in childhood. They cite Sosniak (1985), who found that concert pianists displayed few signs as children 'that they would eventually have more success than hundreds of other young pianists' (p.350). However, we suggest that this does not mean that these pianists as children showed no more ability than children selected at random and given piano lessons. Moreover, the authors seem to ignore the many reports of extreme precocity in musical prodigies (e.g. Yehudi Menuhin; E.N., studied by Revesz, 1925; Mozart; see Winner & Martino, 1993). It is strange that these well known examples are not included in this article.

5. The authors dispute the view that some individuals are capable of effortless progress in music. We agree that it would be preposterous to suggest that intensive training and practice are unnecessary for becoming a musician or a composer. However, the assumption that anyone who works hard and regu-
Is everyone musical? - Peer commentaries

...larity can become an expert is unpersuasive. Children differ enormously in their potential to pick up, retain, and manipulate musical information. This is true in domains besides music. For example, consider the difference between children who teach themselves to read and those who must work at it for years - or the difference between children who discover mathematical relationships on their own, progressing faster than those in their class, as opposed to those who learn with difficulty only what their teachers present to them over and over again.

As the authors themselves admit, some people find it easier than others to gain musical skills. If one observes children learning to play the piano, one cannot avoid noticing that for some children progress is halting, and time at the piano is painful, while for others with the same teacher, progress is rapid and even for some that is not just the whip. Children persist in their class, as opposed to those who discover mathematical relationships on their own, progressing faster than those in their class, as opposed to those who learn with difficulty only what their teachers present to them over and over again.

In addition, the notion that superior pianists have spent more time practicing than less skilled pianists does not mean that it is amount of practice that is not simply ordinary individuals who have worked slavishly. Children not only retain music lessons differentially, but they also use different strategies. A child who ferrets out the organization of the harmonic structure, and can transpose from one to another key, has entirely different options from one who must remember pieces slavishly and cannot make shrewd guesses. So too, for those with a heightened math-number or linguistic sense.

The authors buttress their claim that innate factors are not important by noting that a child need not have musicians for parents to become a successful musician. We agree that this is true, but this does not lead to the conclusion that there are no inherent differences among children. First of all, a non-musician parent may have undeveloped musical aptitude. But even a child of two completely unmusical parents can possess an unusual biological proclivity for music, due either to recessive genes, or to the effects of the hormonal fetal environment on brain structure (e.g., Gardner, 1984; Chomsky, 1975; Pinker, 1994).

The final point made in the paper seems to encompass several points. The authors note that there are many components of musical skill, and that musicians do not always show equal mastery of all of these components. Some may be good at sight reading yet not be able to improvise, for example. The fact that musical ability is not ‘of a piece’, however, does not bear on whether the individual components are biological or environmental. The authors then go on to argue that the component of musical skill, perfect pitch, is not only not necessary for high performance (we agree), but also can be learned ‘by any determined person’. However, the fact that over two-thirds of a random group of college students show ‘some evidence of perfect pitch’ (as measured by pitch memory, not pitch labelling) does not mean that some children may not be inherently better than others at pitch memory and labelling. While it is true that training may lead to perfect pitch, some children demonstrate perfect pitch in the absence of explicit training, astonishment their parents (Winner & Martino, 1993).

Verification of Sloboda et al.'s (1993) argument would require a study in which the influence of environmental conditions is held in control, allowing underlying levels of musical ability to be isolated and tested. In a possible study, one might train a random sample of children at age five - before the typical age at which children are identified as talented in music and instruction is introduced. Children could be given musical training held constant in quantity and quality. After a certain amount of training, subjects would be asked to respond to a series of assessment measures designed to examine a range of valued skills in musical production and perception.

To the extent that individual differences were found in how children learn, the authors note that much of what they discover on their own - we would have to conclude that innate differences in proclivity or potential are at work. If all the children performed in a fairly similar manner, Sloboda et al.'s (1993) hypothesis would find support. Only through such a controlled experiment can we empirically test whether the influence of innate factors is as negligible as the authors suggest.

We conclude with a small thought experiment. Imagine a pool of 100 children selected at random, who have never played or watched chess. Suppose these children are given identical chess lessons one hour a day, and play 100 games against their teachers. Would anyone genuinely expect all these children to be playing at even approximately the same level at the 101st game? We suggest that some children will quickly master what they are taught and go on to discover sequences of moves and optimal positions on their own; others will master what they are taught but not more; and still others will have difficulty retaining even a modicum of what they were taught.

References


