

Creating Creativity With Music

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Creativity, while highly desirable, is popularly regarded as an elusive, subjective characteristic. Within music, it is reflected largely in compositions. However, creativity can be measured objectively and its involvement of music is not limited to composing. Accumulating findings indicate that musical training enhances intellectual creativity in general.

Mozart is sitting alone in the garden of a country villa on his way from Vienna to Prague. It is September, 1787. Suddenly, the muse "strikes" and immediately he has conceived of the peasant's dance that opens the wedding scene in Act I of, arguably one of the greatest operas ever composed, Don Giovanni. Or so the story goes. Later that day Mozart enthalls the count and countess of the villa, recounting how sitting in the garden had elicited a long-forgotten childhood memory of an afternoon in Italy, and how the two experiences coalesced in his mind to produce the exact music that he needed for the scene. Or so the story goes.

How typical of the creative act. How replete with the romantic vision of artistic insight emanating from a genius for whom creativity was both sublime and effortless. Or so the story goes -- for this particular episode is indeed a story, part of an extensive imaginary account of Mozart. It is the creation of Eduard Mörike whose novella, Mozart auf der Reise nach Prag [Mozart on a trip to Prague], published in 1855. Highly popular in its time, it also has been influential in shaping conceptions of Mozart even to our time.(1)

Distinct from the issue of ultimate truths about Mozart's creativity (for which scholars are not in complete agreement), we have in Mörike's novella a case of his own creativity. What, if anything, links these two acts of creativity? It is easy to note differences -- Mozart composed music, Mörike composed literature. Are there different creativities for every field of endeavor? Indeed, can creativity even be subject to scientific inquiry? The nature of creativity is a topic of intense current interest and debate.(2) But it is being studied.

Several approaches to directly measuring creativity have been developed over the years, and these have been applied successfully in many settings. For example, Guilford developed an "Unusual Uses" test in which a person is asked to devise as many uses for a common object as possible; e.g., what are unusual uses for a brick? Also, his "Unusual Situations" test, which asks, for example, what would happen if no one had to sleep anymore?(3) The Torrance Test of Creative Abilities is also widely used; e.g., a child might be asked to sketch as many objects as possible given a set of blank circles.(4)

This is not to say that all workers agree on which measures are best. Amabile has argued for and applied assessments of creativity based on the collective judgments of e.g., a work of art, by individuals who are widely regarded as experts within the field in question.(5) But even with overall judgments, definite factors are evaluated. These include novel use of materials, novel ideas and spontaneity as well as other factors that might be less closely related to the "core" concept of creativity. This "core" I take to be a new way of thinking or doing which is not merely different or bizarre but is coherent and perhaps illuminating.

Even in the absence of universal agreement about how best to measure the highly desirable characteristic of creativity, some workers have sought means to enhance creative thinking. Among these are attempts to determine whether music education affects measures of general creativity. Note that the issue is not whether such education enhances creativity within music itself, which would be expected, but rather concerns the broader domain of expanding ones' intellectual boundaries.

There seems to be a widespread belief that the answer is obviously positive. For example,

according to Webster, "For many, this very use for our subject is at the center of our philosophical justification for music in the schools".(6) There are many well-reasoned arguments that music truly enhances creativity.(7) And there are many accounts of creativity in the musical activities of young children, including composition and invention of their own notation systems.(8) Finally, there are compelling reports of the beneficial integration of music into the curriculum.(9)

However, objective controlled studies are required to evaluate such claims. Naturally, music research has to meet the same standards as exist for all other issues that are subject to science, whether they relate to smoking and lung cancer or to exercise and health, both topics of great debate and uncertainty less than a generation ago. This dawning realization that exhortation and anecdotal reports are insufficient to settle the issue raises the question of whether adequate studies have been carried out. For so important a question, there are disappointingly few such published investigations. However, existing studies do point to a positive relationship between music education and enhanced creativity.

One of the earliest of these was performed by Simpson in 1969, as his doctoral dissertation. Unfortunately, it was never published and therefore the findings are not readily accessible or generally known.(10) Simpson gave 173 high school music and 45 non-music students tests devised by Guilford (mentioned above). He reported that music students scored more highly than did non-music students on several measures of creativity. The findings are correlative, that is they show a significant relationship between music and creativity. Whether or not music education *caused* creativity scores to be enhanced cannot be determined from this report.

An investigation published soon thereafter indirectly speaks to the issue of what sort of and how much music-related education is needed to enhance creativity. Apparently it must be more than twice weekly for three months. Thus, Vaughn and Myers (1971) gave 4th and 5th graders a special program using this schedule, which involved showing students the many parallels between various musical processes and major factors in general creative thinking, such as fluency, flexibility and originality. However the students learned no technical skills, that is they did not actually learn to play instruments. Rather, structured listening was employed. At the end of three months there were no differences compared to a control class which received no special treatment.(11) So three months of occasional listening is not enough.

In addition to the question of the necessary duration of music education, one would also like to know the youngest age at which music can increase creativity. An unpublished dissertation by Wolff (1979) deals with both issues. This author studied the effects of 30 minutes of daily music instruction for an entire year, on first graders. All students were tested at the beginning and end of the year on the Torrance Tests of Creative Thinking and also with the Purdue Perceptual-Motor Survey. A control class received no music education. Wolff found that the music students exhibited significant increases in creativity. As it happens, they also developed a significant increase in perceptual-motor skills.(12) This study indicates that the creativity of children as young as first graders can be enhanced by music education, apparently if it is a sustained part of the curriculum rather than as a periodic addition to the school day for a few months.

Are first-graders the youngest children in which music can increase creative thinking? Probably not. Magda Kalmar studied the effects of music instruction on pre-school children of three and four years of age. Working in Budapest, Hungary, Kalmar obtained test scores both for the Torrance Creativity Test and the Binet Intelligence Test and also for the Oseretzky Scales of motor development. The experimental group received singing music lessons and musical group play twice weekly; the relatively modest amount of music education was offset by the fact that this treatment was continued for three years. The author found that the music students scored higher than a non-treatment control class in creativity. Also, they had higher levels of

abstraction and also showed greater creativity in improvised puppet-play. An additional benefit was better motor development.(13) There were no differences in IQ, suggesting that music education has quite specific effects on creativity.(14) The exact age at which music was effective cannot be determined because no yearly assessments were reported during the three year period of this study. Benefits might have developed within one year, that is during the third and fourth year of life. Based on Wolff findings (above) it is unlikely that effects would require three years.

The last two controlled studies, both by the same group at Kent State University, studied high school and university students. In the first of these studies, Hamann, Bourassa and Aderman obtained scores on the Guilford Unusual Consequences Test for university students who either were or were not music majors.(15) They found significantly higher creativity scores in music majors. Of course, this is a purely correlative finding; no causal relationship can be inferred from these data. However, the authors also determined the relationship between creativity and the total amount of music education., which was as high as more than 10 years. They discovered that students with more than 10 years of music education exhibited significantly greater creativity than those with less than 10 years of experience. Thus, these authors "tapped into" the "music treatment" that the students had effectively performed on themselves, which is more feasible than undertaking an extremely long multi-year experiment. So, these findings are quite consistent with the idea that creativity increases as a function of the amount of music education.

In the other study, Hamann et al tested high school students, whose experiences included theatrical and visual arts.(16) Once again, and perhaps not surprisingly, the authors found that music students exhibited greater creativity than non-music students. Theater students also scored significantly higher, but, unexpectedly, no effects were found for visual arts students in this particular study. Again, the issue of possible causality was approached by determining the relationship between length of music education and creativity scores, based on the number of academic units of music classes. A statistically significant relationship was observed; the greater the number of units, the greater the creativity scores.

In summary, the findings to date provide solid support for the claim that music increases creativity. Moreover, it appears that active music making is more effective than passive music experience. But it must be realized that there is not nearly enough research on this issue. Detailed and systematic studies of the types and amount of music education for groups of all ages need to be undertaken. In addition, a broader range of measures of creativity should be used to fully explore this critical dimension of the intellect. That creative potential can be increased is of great importance. That music appears to be an effective means of accomplishing this goal should be glad tidings for everyone. After all, what is the greatest source of potential benefit to our planet if not the potential of our imagination linked to rational and unselfish action?

-- N. M. Weinberger

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- (10) Simpson, D. J. (1969) *The effect of selected musical studies on growth in general creative potential* , Doctoral Dissertation, University of Southern California, *Diss. Abstr.* , 30:502A-503A, as cited in Cutietta, R., Hamann, D. L. and Walker, L. M. (1995), *Spin-Offs* , Elkhart, In: United Musical Instruments, pg. 27. I have been unable to obtain a copy of this dissertation; hence I do not know whether the music and non-music students were matched on other factors, such as grade point average, etc.
- (11) Vaughan, M. and Myers, R.E. (1971) An examination of musical processes as related to creative thinking. *J. Res. in Music Ed.* ,19:337-341.
- (12) Wolff, K.L. (1979) *The Effects of general music education on the academic achievement, perceptual-motor development, creative thinking, and school attendance of first-grade children* , Doctoral Dissertation, University of Michigan, *Diss. Abstr.* , 40:5359A.
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- (14) One should be cautious in thinking about IQ scores vs. measures of creativity, etc. Intelligence test scores are comprised of the scores of several sub-tests that aim at tapping different aspects of intelligence. It might be more revealing to know the effects of music education on each of the sub-tests and the separate factors that each of these sub-tests measures.
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