Mozart in AVF testing

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An improvement in our visual field testing process would be most welcome

The 250th anniversary of Mozart's birth is upon us. As if his musical genius, exhibited even as a child, needed any additional lustre, the past decade has seen claims that exposure to his music is associated not only with aesthetic pleasure but with better mathematics skills, enhanced brain development in utero, improved learning among college students, and improved spatial-temporal reasoning and performance in rats and college students.^{1,2} Since visual field testing does involve spatial and temporal processing, Macedo and her colleagues thought that pre-exposure to a Mozart piece might help medical students perform better on their first automated threshold perimetry. What a nice birthday present for Wolfgang that their study, published in this issue of *BJO* (p 543), concludes that listening to one of his sonata's for two pianos seems to improve the reliability of one's first visual field! "Roll over Beethoven!"

Before all perimetrists run out and buy a stereo system or iPod, fancy headphones, and a library of Mozart CDs, consideration should be given to some of the following. The subjects exposed to Mozart used headphones while the "controls" were just in a quiet room. Is it possible that just the act of putting on headphones is conducive to better visual field performance or, conversely, sitting in a quiet room, alone for 10 minutes might increase anxiety and lead to worse performance? Only 10 minutes of the Mozart Sonata for Two Pianos (K.448) was tested. Was it just this piece, any Mozart, any music from a composer of this period, any classical music, or any music at all that might have a similar effect? At least two studies, in small animals, suggested that the effect is limited to Mozart but not Bach or Beethoven.^{1,2} One study, using the electroencephalogram to track changes, found that Mozart but not Brahms or Haydn produced the effect.

Another study suggests that the effects seen are specific to Mozart's music and are the result of the specific periodicity of the rhythms.³ However, it is still possible that Beethoven, Elvis, the Beatles, Antonio Carlos Jobim, Abba, or even acid rock might have a similar effect on visual field performance—or not. We will have to await the sequel study to find out. Would exposure for longer than 10 minutes (or less) improve performance even more? While some subsequent studies have confirmed the so called "Mozart effect,"⁴ others have been unable to duplicate the effects.⁵⁻⁸

The authors point out in their discussion that previous studies found the effect of Mozart's music on psychophysical performance only lasts about 10 minutes, which would have carried the subjects only through the instruction period and, if these other studies are correct, should not have affected the actual perimetry.^{9,10} They are unable to account for the persistence of this so called "Mozart effect" in their study. It is also not possible to know if this effect would also be applicable to the group of glaucoma suspects, glaucoma patients, and neuro-ophthalmological patients (who tend to be as a group considerably older than medical students and more anxious) that are more likely to require visual field testing. We also don't know if listening to this music or any other music also improves performance on subsequent visual fields.

This is an interesting study with potential clinical implications. However, it raises more questions than it answers. It is not clear what the study conclusion should be. Perhaps, all one can say is that compared to being in a "quiet" room for 10 minutes before automated visual field testing, using headphones that play a specific Mozart dual piano sonata for 10 minutes before first time automated visual fields seems to improve performance in otherwise normal medical students.

Despite a large body of evidence that Mozart's music may have a positive influence on a variety of performance tasks, this study does not prove that it was the Mozart that was the causative factor. It could have been the headphones, Mozart music in general, or the specific piece that they played.

I am sure that Mozart had no idea that his music might have such positive side effects. By all reports, he wrote his music purely for the enjoyment of himself and others as well as for profit. Would he swell with pride to find out that his music might have medical application? Or just giggle?

The authors are to be congratulated for proposing a simple, inexpensive, non-invasive procedure for enhancing reliability of one of our least reliable testing methods. If some of the above questions could be answered satisfactorily, this improvement in our visual field testing process would be most welcome. An unintended but happy side effect would be to introduce a wider audience to the joys of Mozart's genius.

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