Is There a 'Mozart Effect'? Ask a Neuroscientist and a Musicologist

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(PhysOrg.com) -- Neuroscientists and musicians have learned that looking at the brain on music can yield valuable insights into how the mind works. Yet, University of Arkansas music theorist Elizabeth Hellmuth Margulis cautions that such research has produced some unintended consequences, such as the mistaken notion that listening to Mozart in particular boosts brainpower.

“When scientists publish in a neuroscience journal, they are interested in what their results say about the brain, not what they say about music,” Margulis said. “But studies about music move into the popular media and can get mistranslated, transmitting potentially misleading information.”

To prevent distortion of science related to music and to benefit scholarship in the broadest sense, Margulis advocates “a conscientious partnership” between scientists and humanists.

Margulis is author of “Neuroscience, the Food of Musical Culture?” published in a special issue of the Review of General Psychology that focuses on interdisciplinary research involving the humanities, cognitive science and neuroscience. In her music cognition research, Margulis has used functional MRI to investigate the effect of music on the brain.

Margulis points to the popularity of the “Mozart effect” – the research that showed improved spatial reasoning after listening to Mozart – as an example of unintentional distortion of scientific research about music. Popular belief that exposure to classical music makes children smarter

has persisted despite the subsequent discovery that listening to Chopin or Lynyard Skynyrd or 50 Cent can produce the same effect. Though unsupported by subsequent research, belief in a Mozart effect has been observed to fit in well with a cultural bias for classical music and parental anxiety about the intellectual development of their children.

“Now, 14 years after the publication of the original article, tiny powdered-wigged Mozart profiles continue, bizarrely, to adorn the packages of myriad Eine kleine Nachtmusik-playing baby toys,” Margulis wrote.

Another example of research results gone awry is the popular story that the pleasure of listening to music is like the pleasure of eating chocolate. In fact, the neuroscientists found that people who experienced a euphoric response while listening to music had activated the part of the brain that responds to sex, chocolate and cocaine – the pleasure center. While the research was designed to learn more about the evolutionary origins of music, Margulis wrote, “What ends up influencing the cultural environment are not the intricate, careful and innovative aspects of the research but rather the rough-hewn impression that musical pleasure works like chocolate and drugs.”

A musicologist could have told the neuroscientists that while music listeners sometimes experience chills and shivers, most listening is motivated by ordinary musical pleasure. Other parts of the brain are involved in responding to other musical stimuli, such as the listener’s response to consonance and dissonance.

The distorted reports of the research into pleasure and music can imply that the listener is a passive receptor, Margulis wrote, “sitting back and letting the music trigger reward centers.” The story can also incorrectly suggest that if readers don’t have extreme pleasurable reactions to music, then they are “probably just not very ‘musical.’”

Musicologists, who study the cultural context in which people perceive music, can play a role in designing research and disseminating findings to minimize distortion in the popular press.

“Understanding and reacting to scientific work on music has become mandatory for the discipline of musicology,” Margulis wrote. “It is equally imperative for neuroscientists to embrace their role in culture and society.”

Margulis is an associate professor of music in the J. William Fulbright College of Arts and Sciences at the University of Arkansas.

Provided by University of Arkansas