

## Mom, Do I Have to Practice the Piano Again? The Benefit of Music Instruction on Executive Function - Frankly Speaking EP 71

### Transcript Details

This is a transcript of an episode from the podcast series "Frankly Speaking" accessible at Pri-Med.com. Additional media formats for this podcast are available by visiting:

<http://www.pri-med.com/online-education/Podcast/executive-function-frankly-speaking-ep-71>

### Dr. Frank Domino:

Danny is a pleasant six-year old male, who presents with his parents for his well-child visit. He's lovely to engage with, but his parents describe a fair amount of frustration with school. Danny seems to have trouble attending, is bouncing off the wall and his teachers are frustrated. They ask you for advice on how to help Danny control his behavior. Hi, this is Frank Domino, and joining me today on Frankly Speaking About Family Medicine is Susan Finney, assistant professor and coordinator of the Family Nurse Practitioner Program at the University of Massachusetts Medical School, graduate school of Nursing. Thanks for coming Susan.

### Susan Feeney:

Thanks, Frank.

### Dr. Domino:

So children and children having trouble attending at a young age, any thoughts?

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**Susan Feeney:**

It's something we see a lot in a primary care. So what they seem to be describing is executive functioning. Can you describe executive function and why is it important?

**Dr. Domino:**

So executive functioning is probably what allowed most of us in medicine to succeed. It's the ability to organize, plan and respond to stressors. And it's got a large dataset to know what is executive functioning, but how to develop it is somewhat challenging, especially in young children. Many things have been looked at to see what's available, and there are a variety of websites you can go to and classes that are being offered to help children organize themselves, most of which we don't really know if it's long term beneficial. The "Longitudinal Analysis of Music Education on Executive Functions in Primary School Children", was a recent randomized control trial that tried to see if music education might have an impact on executive functioning.

**Susan Feeney:**

So how did the study try to augment or support executive function?

**Dr. Domino:**

So there had been some observational data that said, "Learning to... Having music instruction at a young age seemed to improve executive functioning down the road," but it's very hard to coordinate what happens to a five or eight-year-old with how they do in the real world in their 20s and 30s. So they tried to put together a randomized control trial with four arms. One of the arms, there was no change in their education. Another arm received additional one to two hours a week of art therapy, of art class. A third group who were already in music education were continued in music education, and then a fourth group were given one to two hours of music education integrated into their school day. So

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they ran this forward and they measured IQ and a variety of skills within the executive functioning. In particular, they looked at planning, working memory and the ability to control your behavior, or what they called inhibition. And they found that over time, the two music groups, those who are already enrolled in music class or those who had one to two hours per week of extra new music instructions, had significant improvements in all the skill areas with regard to executive functioning, including increases in intelligence quotient. There was some benefit to the art education but it wasn't necessarily on executive functioning, and there was no change in those parameters in the children who received none of the additional education.

**Susan Feeney:**

So does that mean that music education is better than art for these, for developing kids?

**Dr. Domino:**

Well, it does not necessarily mean it's better than art, but it certainly has a different impact on their ability to control their behavior and develop a planning approach. And those are the skills consistent with executive functioning. Now, the art students, the students we had in the art arm, developed considerably greater visual spatial abilities than the other groups, but it did not have the same impact on their ability to control their behavior, to organize themselves and their work and to improve their memory.

**Susan Feeney:**

So, specifically, what was the music instruction? Did they learn an instrument? Was it singing? Just curious.

**Dr. Domino:**

Well, it was... Yes, the answer is, yes, it was all those things. So the class would begin with

everyone singing the same song, and then they talk a little bit, believe it or not, about music theory, they talk about music and art history, and then they would all sing some other works where they were allowed to improvise. And it sounded actually pretty fun, and it was very structured and very organized, and overall, it led to both student and parent appreciation of outcomes.

**Susan Feeney:**

So what other methods can parents employ to develop these executive functions? What can we take from this study and to help our parents? Help with their children like Danny.

**Dr. Domino:**

So, I've actually looked into this for a number of years because we know in medical education, the students that succeed the best are not just always the brightest, but the ones that are the best organized. And there are a variety of software programs. There are a variety of other tools, that you can employ, but their benefit hasn't been well researched. There are some wonderful things that you can talk to parents about, for young children, to help that. So for the Harvard Center on the Developing Child, has a wonderful resource that talks about, by age, things you should be doing. And there's things we've sort of often supported, but maybe we need to organize a bit more. For example, with 5-year-olds, storytelling is a huge deal. Reading to children up to five is very important, but not only should we, as parents, tell them stories, but that we should encourage the child to tell stories. Playing visual spatial games, card games, activity games like, musical chairs and those sorts of things actually do correlate with learning the ability to control yourself, improve your memory and improve your attentional skills. We'll link that resource to this podcast on the landing page, because I actually find the data included there really beneficial.

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And most of it has a strong evidence base, and it's really wise to work with children in every age group, but especially those populations that are a particular risk. For example, low income or parents who were necessarily unprepared or poorly prepared for parenting or are young and have no full understanding of the need for a skills-like executive functioning.

**Susan Feeney:**

Yes. So for us as primary care providers to really support this with our parents, can ensure that they have these resources, and it makes me also think about the whole right brain, left brain connection. And we know that people that are very successful, we have anecdotal information on some of our more profound thinkers Leonardo da Vinci, and things like that, that really excelled in the arts and also in the sciences, and were profoundly successful. So it does seem to bear out... The study seems to bear out what we've seen in real life.

**Dr. Domino:**

And I think that's very true. I was fortunate to be one of those children that absolutely hated having to practice music, but my parents forced me through for a number of years. Did that help me get here? I don't know. But my guess is, you're absolutely right. The ability to use both sides of your brain very effectively probably helps us all learn to organize better and plan.

**Susan Feeney:**

Well, I think this is a very important study, and especially since we are faced with these questions all the time in practice about children who may not be "behaving" or may be hyper. And then if we can really work with, even with our schools, to make sure that they get well rounded, both arts and music to help the students be, and our kids be more... To succeed in executive functioning and just to succeed in daily life.

**Dr. Domino:**

Yep. I think you're absolutely right Susan. This is one of those areas that is very easy to employ in our clinical practice and with very low risk and potential for enormous benefit. Thanks so much for discussing it with me.

**Susan Feeney:**

My pleasure.

**Dr. Domino:**

Practice pointer. With your patients and their families, as well as in your community, support arts training, in particular music training, to help children develop executive functioning skills. Join us next time when we discuss the varied non-pharmacologic approaches one can take to address hypertension.