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## Interview with Stephen Camarata, Ph.D., Professor of Hearing & Speech Science, Vanderbilt University School of Medicine

Topic: Child Language Disorders & Early Childhood Language

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**SP/Beck:** Good Morning Dr. Camarata. Thanks for joining me today.

**Camarata:** Good Morning Dr. Beck. It's great to be with you.

**SP/Beck:** I'd like to start by briefly reviewing your education, if that's OK?

**Camarata:** Sure, that's fine. I got my master's degree from San Diego State University in San Diego, in Speech Pathology and Audiology with an emphasis on speech pathology, and that was in 1981. I earned my PhD in 1984 from Purdue University. My PhD in Audiology and Speech Sciences, but obviously the emphasis was on speech pathology. And lastly, I did a post doc. at the University of Arizona, and that was finished in 1985.

**SP/Beck:** What was the topic of your doctoral dissertation?

**Camarata:** It addressed Linguistic Trade-Off Effects. The notion was that when a child makes a gain in one domain, such as semantics, they might have a linguistic trade-off in another, such as, phonology. So when they learn new words, perhaps their intelligibility would decrease.

**SP/Beck:** And what did you study during your post-doc?

**Camarata:** My post doc. was in Child Language. I also did some work in the Early Childhood Language Lab, and we interacted with special education, psychology and other departments, so it was really multidisciplinary and very comprehensive.

**SP/Beck:** How long have you been at Vanderbilt now?

**Camarata:** I joined Vanderbilt in 1990 as an assistant professor, so it's been 13 years.

**SP/Beck:** I'd like to discuss the diagnosis and treatment of child language disorders.

**Camarata:** Very good.

**SP/Beck:** When you're trying to diagnose a young child, there are so many things you must rule out before you get to language. How do you know where to start?

**Camarata:** Great question! However, the answer varies with the given child and the situation. Basically, when you look at a preschooler who has a low language level there's a lot of possibilities. Low language could be a sign of mental retardation, it could be a sign of autism, it could be a sign of a language disorder, and importantly, it could also be a normal variation! So the first step in the process is to try to establish a differential diagnosis -- and that's pretty tricky in a preschooler!

**SP/Beck:** Absolutely. So how do you separate cognition from language? Is there any way to definitively accomplish that?

**Camarata:** The first step when you're concerned about the child's development, is to work with the physician and the other members of the team, like the audiologist, to rule

out medical causes for the delay. That might involve genetic screening, physical, audiologic, neurological, and so on. Then, after we know the child hears, the ears are OK, there are no overt signs or symptoms of medical or syndromal disorders, then we can assess language.

Actually, many of the intelligence checklists employed at the preschool level have a pretty high weighting for language factors, in terms of cognition. Even if the child has essentially normal potential, they might test below expected levels, or even in the retarded range on a language-based measure because the checklist is "language loaded." What happens over time, with those kids is their language skills come up and their intellectual abilities rise dramatically to meet their potential.

**SP/Beck:** What is the minimum age of a child that you can get reliable child language results on?

**Camarata:** Normally you're looking at 12 to 18 months, somewhere in there would be the low end for us. But of course, if you have a syndrome like Down Syndrome which can be identified earlier, you can start therapy sooner, and that would be desirable.

**SP/Beck:** Very good. Then, given a child aged 12 through 18 months, with no apparent syndromal disorder, but with a suspected language delay, what test or screening tools would you consider?

**Camarata:** There are other options, but you might use the MacArthur Scale as a parent-report checklist for receptive and expressive vocabulary. You also want to do an inventory to see what the variety of babbling is. You should also consider a checklist to see if there is social engagement and social referencing to ascertain if the child is non-verbally interacting. Even in a 12 to 18 month old child with autism, you'll see a resistance to social interaction or a reduction in social interaction.

**SP/Beck:** Are there particular clues for expressive or receptive language that you recommend to mom and dad? What are the things the parents might notice or help validate?

**Camarata:** Let's start with expressive language, as that's fairly straightforward. The child is perhaps not talking, or talking very little. Or in terms of speech intelligibility, when they do talk, the parents simply can't understand them. So in a way the expressive part is pretty straightforward and most parents are really good at recognizing that.

Receptive language is trickier to assess because sometimes the child will gather or read non-verbal cues, even if their not using auditory information in a typical way. Receptive language is often more difficult to assess.

What parents can do, and I'm not advocating this in lieu of getting a professional evaluation, but one thing I recommend is that they talk to the child in a normal way, without using gestures or any hand motions, and without visual cues.

For example, they might say, "Where's the ball?" without looking towards the ball or pointing to it, to see how the child reacts.

**SP/Beck:** Okay. What about treatment options? What are your preferences for a child who's 12-18 months?

**Camarata:** As I said earlier, there are a lot of different conditions that relate to speech and language development and the treatment has to be tailored to the child's individual and specific characteristics. I can't emphasize that enough. So many times somebody uses a treatment protocol which is very effective on some children, but not effective for others. So what I recommend is a program that is individualized to the child's needs.

To be specific, suppose a child readily imitates. When you say something, they say it

back to you, or they say some version of it. You might use imitation then, something like discrete trials as a method for teaching that child. But again, discrete trials may not be a good vehicle for a child who doesn't imitate, while it may be excellent for another child that readily imitates.

So the bottom line, the primary idea is to understand how the child best learns, and then present linguistic information in that way.

The other general principle we have is that because the goal is to get generalized production and comprehension of language, the most efficient way to do that is to make it as close as possible to what the child encounters in the natural environment. So we might start with "motherese" and work from there. There's a number of studies, including our own, that show that children with language disorders tend to learn words and grammar more slowly than other children. Of course, there are exceptions to that too, but in general it's true.

**SP/Beck:** Can you give me a specific example as to how you go about building language?

**Camarata:** Let's say the child might hear the word "ball" five times in a day from their parents. We might want to boost that to 200 or 300 times daily. We're going to focus on individual words and build redundancy in context. It's a matter of interacting with the child as you normally would, but instead of saying "The ball is rolling. There's a truck over there. Let's go outside and play on the swing." We're going to try to reduce that to, "Ball, here's a ball, ball." So they get to hear it over and over again, to increase the redundancy, limit the competing information and build a strong foundation. We increase the opportunities for that child to learn words in context. The data indicate this can be very effective.

**SP/Beck:** Do you recommend that you maintain the same linguistic structure or would you vary that, such as, "Johnny, do you want to play with the ball? Here's the ball. The ball is red. The ball bounces"?

**Camarata:** If the child has a receptive language disorder you want to reduce your complexity to them. You might want to say, "Ball, here's the ball, the ball," you want to speak in fairly short sentences so that child can process and comprehend the auditory information.

**SP/Beck:** So then, in that case, you want to repeat the same sentence over and over?

**Camarata:** Yes. You definitely want to repeat. The main thing you want it to give the impression you're playing with the child, and the child is supposed to be having fun. Sometimes I think of it as sneaking around to teach them to listen, hear and speak. You can teach a child in much the same way you would teach a parrot to talk, but a parrot will only gain a limited use of the words with technique and won't converse. Repetition and redundancy are key within a productive, interactive social context. Of course children are far brighter than parrots, but the point is, start simple, repeat, make it fun, and reward the successes. That can be a reasonable starting point if the child requires that, but it's more efficient to have them learn in a natural way so they get the rich context for using the word, in a socially relevant way, which is what we're trying to do as language intervention.

**SP/Beck:** What about the length and demands of therapy sessions? Can you please share your thoughts with us?

**Camarata:** I'd like to mention that it's fairly unnatural to take a child at age 2 and have them sit at a table and work for 30 minutes straight on language issues using drill. The same is true for phonology, articulation or speech intelligibility problems. If you follow typically developing children, they might spend some time doing sitting and working at a table, but it'll be relatively brief and they generally will not react well to a strict drill regiment.

We know that by the age of 4 or 5 years, sitting down and going through drills can be effective. However, for an unintelligible child at two years of age, when they say a word that's partially intelligible, I recommend that you say it back to them, but don't force them to say each individual speech sound. Trying to get every sound can be very frustrating and difficult, and again, it's unusual for any 2-year-old to be able to do that kind of thing. So the point is, this approach is one that is effective not only for language but also for speech intelligibility. Just to be clear, I'm not saying you shouldn't sit down and work with a child in a didactic way, when they're ready that can be effective. But this would be unusual in young children, and it might have some unintended side effects such as frustration or reducing social interaction because they may come to resist or dislike those kinds of highly structured drill-type of situations.

**SP/Beck:** What are the most common diagnosis you deal with?

**Camarata:** Interesting question. Well, one thing that's happened lately is with changes in the way "autism spectrum" is defined, and many children with language disorders are now being placed within the autism spectrum. It's important for people to understand there's a difference between autism spectrum and full autism, they're really very different things. Therefore, right now I'd say the most common diagnosis we deal with is autism, and the other one that comes up a lot is apraxia, which really applies to stroke patients more readily. Those are probably the two most common.

**SP/Beck:** Hasn't apraxia taken on the definition of virtually any language disorder?

**Camarata:** Some people do use it that way, and our terms and definitions do evolve. Historically, apraxia means lack of volitional control secondary to stroke, when in fact there is evidence of involuntary control. For instance, if someone could perform a task in a reflexive way, but could not do the same task when they desired to do so. That would be more like a classical apraxia. Many of the children who have speech intelligibility challenges are called apraxic, but they don't really match the traditional definition of apraxia.

**SP/Beck:** Thank you so much for your time today. This is an enormous topic and it's hard not to get sidetracked on a thousand tangents. I certainly appreciate your time and knowledge. Can you please list your recommended websites for the readers looking for additional information?

**Camarata:** Absolutely. It has been a pleasure speaking with you. Thanks for the opportunity.