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BILINGUALISM AND THE BRAIN: KEY FINDINGS IN THE SCIENCE OF EARLY LEARNING

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>> LINDSAY KLARMAN: Ok. I want to start promptly because we have a short 30 minutes here.

Good morning and thank you all for coming. I'm always very nervous that people aren't going to show up, so I'm so thrilled to see all of you here today. Thank you so much for coming.

I'm Lindsay Klarman. And I'm the Executive Director for the Hearing Speech and Deaf Center, which is located in Washington State. Have any of you heard of the center before? Awesome.

We have five programs in‑house. We have Audiology, Speech, Deaf and Hard of Hearing Advocacy SFervices, Interpreting Services, and Educational Services. Our Education Department is two‑fold. There's 0‑3 Early Intervention and then 3‑5 Preschool.

>> ANNA DODD: And good morning, everybody. I'm Anna Dodd, the Director of the Parent Infant Program at HSDC.

>> LINDSAY KLARMAN: Let me check in with you. Is everything ok visually? You can see both of us clearly?

Ok. Great.

Anna?

>> ANNA DODD: We have three things to cover today. We're going to define bilingualism for deaf and hard of hearing children, talk about what the research is telling us, and talk about how we might apply in information to direct services whether they're in the home or in the school environment.

As you can see, we've got a beautiful baby boy. From birth until the age of 5 when he's ready to get to school, how do we get a child from A to B? They've had an entire life experience dependent on two things: the experience that they have been exposed to in those years and also the biology.

Language learning happens automatically because the brain builds connections that define language learning and they are developed as experience plus the biology.

There are a few seats over here if those standing would prefer to sit.

>> LINDSAY KLARMAN: Anna's correct. Both things are a part of language learning. We always had thought about the biology or the environment as separate entities. But in reality, it's both. Research is telling us that it's not just nature or nurture. Right?

So think about the concept of making a chocolate chip cookie compared to making chocolate chip pancakes. The raw ingredients are the biologic factors. We all humans have specific types of things in our biology that make us want to communicate. We are thirsty for language. But the experience is the recipe. So it depends on what your family culture dictates or your school experience, the raw ingredients that you have hereditarily mixed with the experience that will become the results or outcomes.

I went to a lecture yesterday with Heidi, talking about when babies are born what happens with they are deaf versus they can hear. What we know is babies who can hear, when a mother is pregnant as early as 16 weeks the baby's hearing starts to develop in utero. That means that babies are starting their language journey before they're even born. This research from 2013 was a study where they ask mothers with new babies as early as one and two hours old to have their babies listen to sounds in their language. 1 and 2‑hour‑old babies could tell the difference between their native language and another language that they hadn't heard before. They were able to recognize their mother's sound within the language that they were hearing. So language acquisition starts pre-birth.

So what happens if the baby is deaf? Of course the baby is going to be exposed to vibrations and that version of sound, but they might not be receiving information through their ears. When they are born, they are ready for language. That is in our biologic makeup. But they can't access language through their ears, so what do they do? They access language through their eyes they are primed and ready to soak it all in.

That means quality language input is important. Do you know the term motherese or parentese? That's the type of talk that we use whether it be spoken or signed with a child versus how we talk or use sign in our everyday language. So this presentation is going to use what's called CDS. C is child, D directed, and the S is either sign or speech. It doesn't matter ‑‑ I want you to let go of the idea of mode here today. We're just talking about language and exposing the child to language. So moving forward we're going to use the acronym CDS.

>> ANNA DODD: So what does CDS look like? If it's using a visual language as American Sign Language, it tends to be a little bit slower, a little bit more deliberate, and there will be repetition of the same signs as well as a bit of exaggeration, facial expressions might be exaggerated, the signs might be a little bit bigger. So CDS, remember the S is for either sign or spoken, they really develop in alignment and at the same time.

>> LINDSAY KLARMAN: And we do have a video sample. We want you to watch this video. And notice what you observe. What's happening with this father and infant?

>> ANNA DODD: Right? It gives me chills. This is a dad. He's saying I love you to the child. My favorite part, he says, "You are the sweetest." And that sign was slowed down and easier for the baby to take in. And did you notice how the baby was reacting? The eye gaze was tracking. She was focused on his hands and also looking at his mouth, his face and his expressions. So it was a great example of parentese.

We have another video of a grandmother with an infant. Let's take a look at that one.

>> You can see that beautiful relationship developing between this grandmother and this grandchild. Again, we have the repetition of the word grandma. And did you notice what the baby did? The baby was responding and reacting. There was some laughter. And then the baby also picked up a hand. The grandmother modeled it. And that's a culturally appropriate way to teach sign. And then the next time she said, "I'm not going to force you. You'll do it yourself." And the baby did lift up her hand.

Just have to move.

So when the baby starts to gesticulate what we see is an attempt at communication. There's a response that's happening. And that is called motherese or parentese. CDS.

So around 5 to 7 months of age a baby will start to play with language regardless whether or not they can hear. What we know is if the child is receiving high‑quality input, the baby will start to react using what's called babble. This research, again, was with children who can hear. And what they found was when CDS was happening, babbling started happening right away. There was a high correlation between motherese and babbling. When there was no input or the input was low quality, we saw a decrease in babbling.

This is important information because if the baby doesn't start to babble, it's hard for them to get to the next step of language development which is putting two words together or developing sentences. That's part of the language acquisition order. I receive the information, I start to babble or play with the language, and then start to form full words and eventually sentences.

>> So a takeaway point of this is that mode of communication doesn't matter. What is important is that the child directed speech or sign be meaningful, that there is intentionality and that it is ongoing.

Language development, whether it's visual language or spoken language will occur on the same timeline. Where language is processed in the brain happens in the same area regardless of mode. So language development supports the other. So language supports language development is what I meant to say.

>> And I want to show you a video from our preschool. These kids are very diverse. So I want you to figure out which of the children are deaf and which can hear and which are Deaf+. I'd like for you to try to glean that information. So let's watch the teacher interacting with all of the children.

Did you see the first part? This is the teacher in the plaid shirt. Tried to offer a book to a child. He handed it to the child. And did you see the kid say, wrong, wrong book? He didn't force the book to the child. He offered it. That's high‑quality input.

So, now I want you to try to notice the children talking to each other amongst themselves. The boy is talking to himself. So just watch this really quick.

So, you can see this one counting.

How did the teacher get the children's attention? Not only waving but using the physical environment, the kids immediately knew their queue to pay attention. That's part of high‑quality input as well, knowing turn taking. Knowing attention skills.

Often, also, he offered two options ‑‑ the theater, the dog, the beach, which story do you want to hear? He left it open for the kids to decide. And watch the children respond.

So, the child repeats what he wants using the specific word. Did you see the orange? And now she's saying, "Orange."

She didn't tell him one of the three choices. So the teacher made an assumption about what she was approximating. And the teacher said, "Do you want a horse?" That's part of natural language, too, with children who can hear. You're trying to figure out what they are saying because sometimes they're not producing the word correctly. If you say it or you repeat it or sometimes you use a made‑up word, the same thing was happening in this scenario.

This is the father. Again, dad is trying to go back and forth with his daughter to figure out what she wants.

I'm going to pause so we can move forward. Because our presentation time is limited, but I want you to let me know afterwards if you were able to assess out who might have been hearing or deaf in this video.

From the beginning of this presentation we've been talking about infants. And there is a sensitive language period or window of time. In general, we know it's that birth to 3 when input is critical for language development and it needs to be high‑quality input. We're talking ‑‑ if we're talking about bilingualism, that sensitive time period is expanded. It's actually birth to 5. And that's because two languages are being entered into the brain or stimulating the brain and so the brain is taking a bit of time to figure out how these different languages work, their grammar, their syntax, etc.

So a healthy baby's brain is working to differentiate and understand these two languages. And it's actually a good workout for the brain to be exposed to two languages. There's really no negatives. High‑quality input in two or more languages equals more opportunity for brain stimulation and development.

The point is, there is absolutely no evidence that says bilingualism causes language delay. If anything, bilingualism helps the brain develop. It doesn't cause a confusion of the two languages. We call it co‑switching, which is a skill to be able to go between two different languages. So if we're worried that children who are deaf and hard of hearing, they're only saying one word or only signing one word but if you count all of the words in their brain, they're on the same track as a child who with can hear and who is monolingual.

Bilingualism doesn't make you smarter, sorry to say, but we know there is practice or exercise happening in the brain that can lead to higher attention spans, higher memory skills, due to the going back and forth between two languages. You don't have to pick spoken language or sign language. You can expose the child to everything. Give them as much language as possible because the time period that Anna was talking about is a very sensitive time where the brain is prime and ready to take in any and all information. It's food for the brain.

So, for your homework you need to practice signing and speaking a lot, more than you thought was even possible before. Share more information. Have a running dialogue with the child. If you're not talking directly with them, say, oh, now we're going into the store. We're going to find some apples. Just have a running dialogue a narrative of what you're doing for the child.

Give less commands. I know it's easy. I'm a mom. So, stop it, stop it, don't do that is an example of a command. But think about the experience that the child is going through. Anna had a great example of one kid who wanted to use a cup of water. I know my time is running out. I know. I know. Ok. Ok.

Anna?

>> ANNA DODD: Yeah, because we are out of time. We've gotten the hook from the back of the room. I just want to thank you so much for coming. And please join us in the hallway. We can continue the dialogue.

I would like to meet students, so please, please, if you are a student, please introduce yourself to me out in the hallway.

Thank you so much for coming.

>> LINDSAY KLARMAN: There's handouts available in the back if you would like to pick one up before you leave.