

## How Infants Think and Feel: What Research Tells Us

Dawson Nichols: Hello, and welcome to Baby Talks. We are so happy to have you with us today. Baby Talks is a series of webinars for teachers, family child care providers, and home visitors who are working with infants and toddlers in Early Head Start, Head Start, and child care programs. These webinars are here to introduce you to research about infant and toddler development.

OK, let's get started. How Infants Think and Feel: What the Research Tells Us. This Baby Talks is going to be a little different from other Baby Talks that you might have seen because this is the first in a three-part series. We are going to explore early childhood from the child's perspective this time. This is a little tricky, because as Alison Gopnik says here, "We can't ask babies what their consciousness is like. Babies do not make reports for us." It's not like we can talk to them in the same way that we talk to one another about our thoughts and feelings.

Beth Zack: That's true. They don't talk, but they do communicate, and they do this through their body language. Think of those head turns away, back arches, cooing, crying, and where they're further putting their attention.

Dawson: Yes, yeah. OK. Yes, they do have a lot of different kinds of language that they do use with us. But my point was, they do not have speech, and they cannot talk to us about their thoughts and feelings. As a way of demonstrating this, we have an example of how it is difficult to understand what a child is thinking, we're going to look at a little video here. In your videos guide, you will see that your first prompt there is a reflection where we're asking you to think through what you think this child might be looking at and what they might be thinking about. Take out the viewers guide if you haven't already, and as we watch this video, be writing down some of those ideas there. This is a silent video. You will still hear my voice as the video goes along. There is no glitch happening here, but I just wanted to reflect.

Most people have had the experience that they work with a child like this, and they start to think, "What is that child thinking?" It's a natural question. How does that child see things? How does that child understand things? Again, they can't tell us directly. But thankfully, research is giving us more and more insight into what is actually going on in these children's minds.

Beth: Right? It's so true. Ultimately, it is a mystery, and we'll never know exactly what a baby is thinking or feeling. But we have science to help us understand how babies come to understand the world, and just watching this baby is really making me think about our learning objectives for today. Let's get right into those. Really, we want to give you a feel for how babies experience the world. To do that, we're going to focus on three areas, and the first is describing development during that first year of life. Now, we can't cover everything, but we're going to cover some highlights for you. Yeah.

Next, we're going to identify ways that infants, they process information differently from older children and adults. Then finally, we're going to explain practices that promote learning and development during that first year. I want you to keep in mind throughout the whole webinar today that a family's culture, their values, their expectations, their language – all of these things are influencing their childrearing practices, and that really shapes the individual child. As a member of the Head Start community and family, partnering with families to understand and adapt your practices to meet the needs of every child is really an important part of our work in advancing equity.

Dawson: All good. All good thoughts and ideas. Yes. Now, everything that we're going to talk to you today ... Everything we're going to talk about is based in science and has research that backs it up. We're going to explain some of that research. But in this series, we're trying to get at something that's a little more elusive. That is, what do young children actually experience as they're navigating their way through this brand-new world and discovering all these new things? What do they know? How do they come to know what they know, not as facts but as experiences? Because that is, after all, how babies learn. They don't gather facts from the world. They don't go to the library and look up facts in books. They gather experiences. This is how they learn. To understand – especially very young children – we need to think about what it is like from their perspective, to be a young child. We need as far as we can to empathize with these young children. If we do, we will be much better at understanding their experience and have a deeper, more profound understanding of them and will be better able to help them learn and grow and thrive.

Beth: So true. Empathy is so important. For those of you who have not been on a webinar with Dawson before, he used to be an actor in his previous life before he joined the child development world, and he is quite invested in empathy.

Dawson: It's true, I'm very committed to this idea that understanding somebody is great. But to get a really deep, profound understanding of another person, you have to really try and understand their perspective, see things the way that they're seeing things. Facts are one thing but really walking in another person's shoes is something else entirely, a different kind of understanding.

Beth: During this first year it might be booties, right?

Dawson: Aha, yes. OK. Yes. I think it's time for us to introduce ourselves.

Beth: I think that's right. First of all, things look a little different. There's two of us. My name is Beth Zack.

Dawson: I am Dawson Nichols.

Beth: We're from the National Center on Early Childhood Development, Teaching, and Learning, the NCECDTL. We are based at I-LABS, the Institute for Learning and Brain Sciences at the University of Washington in Seattle. I-LABS is a partner organization in the NCECDTL

consortium, and we are one of the leading infant research centers in the country. We love working with children.

Dawson: Yes, we love thinking about how children think. But again, today, we're going to do a slightly different thing. We're going to try and think as children think. What is that thinking process like for a child?

Beth: Right. To sort of help us get started here, I thought it'd be fun and also hopefully helpful for us to all think back to our own childhoods. I'm particularly interested in first memories. How far back do people's first memories go? We set up a quick poll to start here just to think about those. It's pretty simple. I just want you to log whether or not you remember something from before your first birthday, your second birthday, third birthday, fourth birthday, fifth birthday, or from grade school and beyond. We're going to go ahead and launch that poll for you.

Mine's actually quite clear. It was my third birthday, and my uncle gifted me a pair of Mets – like the baseball team – a uniform but it was pajamas and I was very excited to put these on. I remember I went outside and I knelt in the grass and I was holding a brown wiffle ball baseball bat for my third birthday, and my dad took a took a photo of me.

Dawson: Outside in your jammies.

Beth: Outside in my jammies. I have a September birthday, so it was still a little warm, too. I'm OK there.

Dawson: Excellent. Let us now look and see how we're doing with this poll. Here we can see the results. Very few there in the first and second birthday.

Beth: Which is actually not surprising at all. It's very rare to remember something from before your first or second birthday. If you do, maybe kudos to you. It's not common at all. Everyone else is sort of falling in that range where it's more likely that you would find something there.

Dawson: Yeah, I wonder how many people fall into my category, that I honestly couldn't tell you how old I was. I was very young, I know. But I have no sort of sequential memory that way. Early memory doesn't seem to me to work quite like that.

Beth: Right, and just snapshots. Because just because they do remember something from before first or second birthday doesn't mean you remember everything from that time point on, right? You still have all these gaps in your memory.

Dawson: Yeah.

Beth: I wanted to just do a real quick reflection. I want everyone just to think back to that first memory that you just logged. Is there a photo from it? I'm asking because memories are tricky. When I told my story, I mentioned that my dad had taken a photo of me. It turns out, I've seen that photo many times over the years. It was actually on my dresser for a long time. There's

been stories about it. It's really hard to say whether or not that is a true memory that I have or that it's just from that photo or from stories that we hear over time.

Dawson: Yes, I have a lot of memories like that. It's hard to say, do I really remember that? Or have I just looked through that photo book enough times? Yeah. Interesting. Interesting. It makes me wonder, is there a time before memory? Can we say for instance, that very newborn children do not have any memories? What do you think?

Beth: Well, yeah so as adults, we've just talked about it, it can be hard for us to access them. But it doesn't mean babies don't have them. They do. Babies are still forming memories during this time. Just as adults, we either forget them or they get replaced, there's sort of different theories about what happens there. Everything we learned as babies is shaping us throughout our lives. We actually know that babies are even learning before they're born. In particular, so I want to talk about vocal sounds travel particularly well in utero. When a baby is ... At birth, it's not the first sound that a baby has heard. They actually show a preference for their birth parents' voice when they're born, which is really cool.

Dawson: I love that.

Beth: They're hearing sounds in the womb. There's actually this really touching study just from 2019 that I wanted to mention, and it was done with preterm infants who were going to undergo a painful procedure. Now, normally, when that happens, there's no family member in the room with them. For this study, they allowed mothers in the room with the infant during this procedure, and they were allowed to talk and sing with them. Then there was another group of infants who did not have their mothers in the room during some sort of painful procedure. They compared these two groups, and what they found was through observations and measuring the oxytocin levels, was that hearing the mother's voice decreased the amount of pain that those infants felt.

Dawson: Oh, wow. We think that that's because the infant remembered the mother's voice from the womb?

Beth: Yes. Then we have other research that shows that it's not just that newborns recognize their birth parents' voice, but they actually recognize their home language. That's from their birth parent and other people. They're hearing and learning these speech sounds in the womb, which is just amazing.

Dawson: It is amazing. It makes me think that these early memories, early experiences are like the first seed of a plant. The seedling comes up, and it doesn't look like the adult plant yet. It's only got a leaf or two, but it's on its way. Yeah.

Beth: Right. Yeah, I really like that plant analogy. We can see that how that growth it just keeps going after birth too. Memories get stronger during that first year. Infants develop object permanence, so they remember that objects and people, that they continue to exist after they leave the room or after you go behind your hands for Peekaboo. They know you're actually still

there. They get better at remembering what we do. They're learning by watching us, which makes modeling what behaviors we want a really effective teaching tool for us as parents.

Dawson: Yeah, modeling is such an important tool that we have. Again, I want to think about this from the child's perspective because almost everything is new at this stage, and so much is changing all of the time. I, as the baby, don't have any context for any of this new stuff. Understanding things is just so difficult because of that, you know? I'm looking to my caregiver for clues about how I can make sense of all of this stimulus coming in.

Beth: Right, and it's no wonder babies get overwhelmed and need soothing. I mean, we need help to with everything that's new all the time. Can you even imagine?

Dawson: Yes, I need it when I am traveling abroad, for instance. I need a lot more soothing. [Laughter] For babies, it works at all, it just is amazing.

Beth: Right. It is so amazing. Babies, they're born with their senses primed to begin this learning process. Let's look at some of that now.

Dawson: Yes. OK, I want to cue our next video here. People are aware of how this is working. Our plan is to look at some videos of children who were just in normal, everyday situations. We want to look at what's going on, and we'll talk about the science of what's going on in the child's brain. But again, we want to look over the child's shoulder and try and see this as much as we can from the child's point of view. You'll see in this first video you're actually looking over the child's shoulder.

Beth: Right, and as you're watching this one, we'd love for you to open up that viewers guide again, and there's a spot for you to jot down some notes. What might this infant be experiencing? What might they be thinking during this interaction? Let's watch a little bit, and then we'll come back and discuss.

Dawson: Excellent. Here we go.

[Video begins]

Caregiver: Here comes more. More broccoli. Mmm, that was good. Open wide. Very good. I know you would like to hold my finger while you eat. Would you like more? Is it good? There we go. You want to help me feed you? Fingers taste good too? My fingers taste good sometimes. Would you like to taste a little more squash with those fingers? Mm, that was very good. I know, our fingers and hands. Do they have squash on them now? Is that why they taste good too? Let's see, would you like some more? I know if I leave the bowl there, you're going to get the bowl. Mmm, very good. Yummy squash.

[Video ends]

Beth: I just have to start by complimenting this caregiver. Oh my gosh, she was so present and attentive and upbeat. You know, we couldn't see the baby's eyes, but you could tell that there

was eye contact going on there. They're in this wonderful back and forth interaction. But the main thing that I want to highlight here is that rich language she was providing, which is so helpful. Babies need to hear a lot of language. She's doing it just right. This is a beautiful example of what we call infant-directed speech or parentese.

Dawson: Yes, parentese, but not to be confused with baby talk.

Beth: Oh, definitely not. It's not that, just ga-ga-ga, right? This is parentese. You heard it. It's that exaggerated speech, the fluctuations in pitch for sing-song tone. She's slowing down her speech for the baby. It grabs baby's attention. They love listening to it, which just makes it that much better. Right?

Dawson: Yeah.

Beth: It supports language development. The short sentences, the lifted, extended voice. We know that a rich language environment, that it paves the way for learning, not just one language, but multiple languages.

Dawson: Yeah, it's a great reminder to use parentese all the time, if you can. It's a really, really effective practice. But I want to bend this again to the child's perspective. I am curious about what that child is tasting and what that child is seeing. But even before we get there, what I was thinking about when I was watching that was whatever the child is tasting, whatever they're hearing or seeing, it's there because the caregiver brought it into that child's environment. I'm not able to do that for myself at this stage. I'm sensing things because my caregiver is putting me in a position to be able to do that.

Beth: Right. That's such a great point and a really useful context for everything that we're going to be talking about here today. Babies are social creatures, and they're drawn to adults, right? They need this caring adult. Hopefully they have many caring adults like us, right? Like you loving, attentive adults to help them bring new experiences and to navigate the environment.

Dawson: Yes, so you know, from the child's perspective, again, I am counting on that adult. I need you, you the adult, not just to bring me food. But I mean, the sounds that I hear ... If I hear a sound behind me, for example, before my neck muscles have developed, I need you to either bring that in front or to help me turn around to see. If I'm doing tummy time and there's a toy that I'm interested in, I might not be able to get to it myself. I need you to either bring it to me or me to it. I am so dependent on you, the caregiver.

Beth: Right. So true. Especially during that first year, children are dependent on adults to help them.

Dawson: Yeah. This seems to me that we've come to our first principle here. We are going to get to effective practices that promote learning during these first 12 months of life. But first, our practices are all going to be based on three principles of development. Here is our first one.

Again, it's spoken from the child's perspective here. I learn through experience, and I need help getting access to the things that will help me learn and grow.

Beth: Right. I think it's good to think of it as a principle rather than a practice. Because every child and every situation is different. Things change so quickly – as we know, right? – during that first year. But these principles are still going to apply, whether you have a one-day-old or a one-year-old, they're both primarily learning through experience, and they need help getting access to those experiences.

Take the outdoors, for example. You know, a little baby can't be like, "I need some fresh air. I should go outside and get it." Right? [Laughter] Like they need the adult to bring them outside and to give them these wonderful experiences.

Dawson: Yeah, and again, from the child's perspective, if it's there in my sensory experience, it's there because an adult helped me have access to it. Even this child with the pebbles on the wall had to be brought over to the wall so he could have that wonderful experience. I think I think of music in this regard. Unless an adult is singing or playing music, a child doesn't hear music. Certainly, that's one of those experiences we want to help all children have.

Beth: Right. Yeah, and you know, the same is true of food, like we just saw in a video that that provider is bringing those experiences to that baby.

Dawson: Absolutely. In both of these examples that we've seen I think I'm here in my highchair and I'm eating, but what am I tasting? You have to feed them. But also, why am I tasting this? Let's talk about that a little bit.

Beth: Right. Yeah. As human adults, right, we have a difficult time describing what we taste. It's really difficult to figure out what is an infant tasting and experiencing? Do they taste? Yes, they do taste. Are their tastes developing and becoming more sensitive as they grow? Yes. But beyond that, we can't really describe what that experience of taste is like for an infant.

Dawson: Yeah, I mean we know I guess that they are tasting, because they do develop preferences during that first year, right? I remember my own daughters liking some foods and absolutely not liking other foods.

Beth: Oh, yes, my daughter is the same way. But you know, this is actually really fascinating. Infants are born with a preference for sweet things and less for bitter. This is actually basic biology. That preference for sweet, that's drawing it to their mother's milk. That aversion to bitter, it's keeping them from swallowing harmful substances. This preference can actually last until late childhood.

Dawson: Wow, that is so cool. I think about that, I compare that to the other senses, it's true for all of the senses. You know, even in this first year, babies have preferences for different kinds of textures. People know that they like high contrast images, and not so much with subtle color differences in the images that they look at. It seems true of all the senses.

Beth: Yeah, and you know, it's important to keep in mind refining our senses is one of the earliest phases of development. We have this chart here showing waves of brain development that happen over a child's life. These are sensitive periods, periods where the child's brain is tuned in to different kinds of development. If you look at this graph, you'll see that senses are one of the first things to develop. Then other phases of development, they build on our ability to sense to make sense of the world.

Dawson: I like that, to make sense of the world. It's right there in the language. We're concentrating on the first 12 months of life in this webinar. That is when this sensory development is really, really going strong. As you say, the senses are developing, and other things are building on top of those things that they're learning through their senses. Development in all of the domains, we should be clear, is happening during this first year. But again, the senses are really primary and help those other developmental areas along.

Beth: Right. This is a great time to mention the ELOF, the Early Learning Outcomes Framework, whether you're familiar with it or not, it is an amazing resource for understanding young children's development. We have links to it in our viewers guide, including the apps ELOF To Go and the Spanish version, MELOF, as well as ELOF@Home, which is designed for home visitors. Make sure you check that out.

Dawson: Yes, and it is true. It is thorough; it charts development in all areas. It is very systematic. It's such a great resource.

Beth: I look at it all the time.

Dawson: Yeah, it certainly covers the top one here, perceptual, motor and physical development. That's what we're discussing here. Again, it can't be stressed enough: We learn through experiences, and experience starts with our bodies and with our senses.

Beth: Yep, and our perceptual experiences, they come to babies at different times. We already talked about infants' first experiences with sound. That is happening in the third trimester. They can hear the birth parents' voice from inside the womb. But it's different for vision, right? It's dark in there, they don't have a flashlight to kind of look around. [Laughter] There's no visual experience happening inside. They need some time to refine their sense of sight once they're born.

We know that newborns can make out faces that are close by, so while they're being fed, or cuddled. This is sort of this is nature at its finest, right? Because they need these things. It's not really until about six months of age that that sense of sight fully develops.

Dawson: Yeah. This is happening with all the senses. Again, I think it's important to remember, this is what's happening to the brain as a whole. It is born ready to learn, with exquisite sensing abilities, but it needs practice. It needs something from the world to be brought into contact with it so that it can shape itself according to that sensory experience. You know, it's learning as we go.



Beth: Right. Like anything, the more experience you have with something, the better you're going to get with that. I think this is a really good takeaway for families. Especially with your firstborn, right, it's hard to know how to interact with a newborn. Like we said, like everything, it takes practice.

Dawson: Yes, we've been talking about it with children they need practice. But it's true, adults too. The more experience we have with anything, including interacting with infants, the better, we're going to get at it.

Beth: Right. We can help as education staff, so teachers, home visitors, family child care providers, you can help families understand how much development is really taking place and happening, even when they can't see it. The senses and these senses are sharpening. Experience really helps that process. A wonderful example of this is language development. Babies, even though they're not talking yet, their brains are listening to all the sounds they hear in their environment. They're learning from them. This is why talking to a newborn is so important.

Dawson: So important. It's true of the other senses, too. I remember stringing a string of lights above my daughter's crib and watching the joy that that brought to her. But knowing that that experience too is actually helping her vision. It helps, because it is more gentle stimulation that is available to her, and she can trace these lights while she's enjoying it.

Beth: Yeah, my daughter has those same lights. But you're right, it's these gentle sensory experiences that are really helping babies learn and grow. This is visual. It can be touch. The cool thing is that even familiar activities can be made new. Take crawling inside on a carpet, for example. Your baby gets used to that. Well, you take them outside and put them in the grass or on sand or a different texture and now there's new feelings on their hands.

Dawson: Yeah.

Beth: There's also new smells, new sights, new sounds. There's so many new sensory experiences that can be had by going outside. I think it's important to mention that how you feel about being outdoors can really influence families. If you're willing to take those babies out and get comfortable with it, it's helpful. You're modeling for families, and you can also encourage them to explore the outside with their babies too.

Dawson: Yeah. I think that that is so important. Again, the senses are developing during this first year. The outdoors is such a rich environment for that. I want to get back to the child's perspective. The vision is getting clearer, things are coming more into focus, and I'm seeing them from different positions too, by the way, right? Because now I'm not always lying down, I'm starting to get up and move around a little bit and toddle. I'm seeing things from a different perspective, which is fun. But smells are coming into better focus. Sounds are becoming more distinct. Touching new things, all of this new information. I think we need to remember that babies are sometimes overwhelmed by the amount of new information that they're getting.

Beth: Right, which makes me think we need to think carefully about that first principle that we've already mentioned, right? Babies do need help getting access, but they also need help of not becoming overwhelmed by the number of objects or experiences, sounds, and their own emotional life as well.

Dawson: Yeah, so let's add that to our No. 1 there. I need help navigating change and regulating my emotions. Let's recognize that this goes both ways with regulating the emotions and regulating the amount of information that's coming in. Sometimes I need you to help me get access to these wonderful experiences that shape my sensory experiences and shape my senses, but sometimes I need you to help me limit new things. If I'm feeling overwhelmed with something maybe you can help me remove some things from my environment.

Beth: Right, or you could move the child to a quiet place or a place that they can rest. Not just moving things but also moving the baby too.

Dawson: Yes, exactly. Good. Yeah.

Beth: Yep. You know, remember it's different from child to child. Children have different temperaments. That means they need different things, and we need to be adaptable to that. This is true for all infants, including infants with a disability or suspected delay.

Dawson: They are all individual. I mean, wouldn't it be great if there were like rules you could just follow? Here is how to raise a child: One, two, three and then you're done. [Laughter] It's just not that way.

Beth: Gosh, that would be amazing. But we know it's not only different for each child, but for that child throughout time as they grow and develop.

Dawson: OK, this idea that it's different for every child reminds me of an anecdote that I want to share. I hope you'll indulge me for a second. My uncle is a swimming coach. He's worked with Olympic athletes, been to the Olympics a number of times. He's really good at what he does.

There was a swimmer on another team, not his team, that was having some difficulty. He was showing a lot of promise but was not really getting into the groove of things. The coaches from that team asked my uncle to come over and see if he could help this kid out. My uncle goes and spends a lot of time just watching the kid in the water, watching how he does his workouts, watching different strokes that does. Then he starts to step in and suddenly change things around, change which strokes he does first, how long he does them, the order of his practice.

Sure enough, this kid started improving. The other coaches came to my uncle and said, "This is terrific. Can you tell us what you're doing? Because we want to do that with all of our swimmers." My uncle had to say, "No. This is for this kid. This is not for everybody." You know, coaching an athlete is something that has to be done on the individual level. It's true for raising children too. For these infants from birth to one, but also all along the way, we have to

recognize one another as individuals. We have to ... It's more difficult, but we have to treat them as individuals and recognize their different strengths.

Beth: Right. You know, it goes beyond just thinking about that individual child, but it also makes me think of partnering with families. Every family is different, they have different circumstances. Talk with and learn from families. Ask them about their culture, their values, their expectations, the childrearing practices, what we mentioned earlier on, the routines. Remember that these things might change over time. You can't just ask once. You've got to check back in.

I'd love to direct everyone to your viewers guide now. In there, we have a prompt for one question you can ask a family to help you better understand and support their infants during that first year of life. I encourage you to come back to this later, because we have to keep on moving through, and then actually do it. Ask that question of a family and see how it changes things and what you learn.

Dawson: Yeah, we can learn so much from families. Even just asking that one question can really start to build that relationship and start to treat each child as an individual based on all of that knowledge that the family has of that child. It's a partnership, and working together is the best way to do it. Even in the same family, as you were saying things change through time. Different children have different temperaments. As a younger kid, I can say, "Don't treat me like my older siblings. Yes, we have the same family, we have the same culture, but I have very individual experiences and very different tastes. Please treat me like the individual that I am."

Beth: Yes. That really makes me think of your wonderful plant analogy again. Some plants need more light, some need less. Some need more food, or nutrients and stuff. Some don't.

Dawson: Yes, and I think it's nice because our job is not to shape them in a particular way. We're not molding them and sculpting them. We're simply helping them grow. I like that.

Beth: Right. Yeah, and you know, children recognize this too. They look to us not only for food, but for those experiences, too, that we talked about. This makes me think it'd be a great time to show the other part of that first video. Can you cue that up?

Dawson: Oh, yes. OK, here we go. Remember, when we first saw this child, we asked you to write some ideas down in your viewers guide. Now might be a good time to look back. What did you think that child was looking at in that silent video? Because now we're going to show you what he was looking at. This one does have some sound. You won't hear us talking over this one. Here we go.

[Video begins]

[Women speaking Spanish]

[Baby coos]

[Women speaking Spanish]

[Baby coos]

[Women speaking Spanish]

[Video ends]

Dawson: I love that. Of course, he was looking at his teachers there. I love how the camera focuses on the teachers too. I think that's so appropriate because he's learning but he's only learning with their help. They are working as a team. What makes her so interesting? What do you think might be interesting about her in particular? Jot down some ideas for that in your viewers guide too when you have a moment.

Beth: Right. While you're thinking about that, I just want to highlight, babies are drawn to adults. I mean, how could you not be drawn to this? I mean, this adult gosh, so engaging. They're naturally social from the very beginning.

Dawson: Yes. This is effectively our third principle. Yeah.

Beth: Right. Yeah. There's so much research showing that infants are social from their very first moments.

Dawson: Yeah. We don't have to go very far out of our office to come up with an example of this. The research really started here. The research on how babies focus particularly on adults and are social from the very, very beginning – a lot of it stems from some groundbreaking work done by one of I-LABS' cofounders, Dr. Andrew Meltzoff.

Beth: Right. The study we're about to share really helped change the way we think about babies. It was so simple yet so effective. You want explain this one, Dawson?

Dawson: Oh, no, we both know it, we should tag him it.

Beth: OK, sounds good. Let's do it. Dr. Meltzoff, he was interested in when infants imitate adults. You know, imitation is a great learning method for adults and children. But the prior belief was that children didn't actually start to imitate until they were much older.

Dawson: Dr. Meltzoff believed that this might be not quite right. He decided he was going to test it. He went into hospitals and started testing newborn babies, sometimes within an hour of the time that they were born. His idea was that imitation is something that babies naturally do, maybe they do it really early. He started making faces at babies to see if they would imitate him and make that same face back. I've always wanted to see the research study, the research grant that was written up for this. You know, I would like to have these funds so that I can go make faces at babies.

Beth: Right, I'm sure there were a few laughs, right? I couldn't wait to try this with my daughter. I wasn't sure if I remember on the day, but I did. The cool thing is, is that it works just like that. These are not photos of me. This are photos of Dr. Meltzoff from the '70s, making faces and showing the infants imitating those faces back. This study has been replicated across time. It really opened people's eyes. Something that seems so obvious now maybe, but that infants focus on human beings from their very first days and even hours.

Dawson: Yeah, it's a really important focus that they have too. Subsequent studies have shown that this is not just a physical imitation that's going on there. Infants are reading the emotions in the adult spaces. They're not just paying attention to faces, but also obviously voices and touch and smell. They're getting so much information from the adults.

Beth: Right. This fits with what we've been talking about. I mean, I've heard people say that human infants are so much more helpless than other species. But you know what, that's only true if you ignore the adults.

Dawson: Yes, and you can't ignore the adults.

Beth: Nope.

Dawson: The adults are the most important part of the environment.

Beth: Exactly. You know, human babies, they're born with this capability to make quick and close connections. That's not helpless at all, right? Their ability to make these quick relationships and to rely on humans for food and comfort and learning, that makes them the opposite of helpless, if you ask me.

Dawson: Yeah.

Beth: It's one of the reasons that experts refer to the adult caregiver pair as a docket, because they work as a team.

Dawson: Yeah, and I love that idea of thinking of this as a special skill that children have, this ability to be social. Again, I want to bend this to the child's perspective. I'm looking out at this world in which everything is absolutely new. But I find myself drawn to these creatures that are like me. I don't know why I'm attracted to them at this point, but I am. I'm fascinated by their faces and their voices. When they're around, I want to pay attention, and I want to learn from them.

Beth: Right. That's our third principle.

Dawson: Yes. Are we going? Sorry, I missed my cue there.

Beth: Oh. It's not an easy process.

Dawson: We were talking about this third principle. It's an important principle, probably prior to the other two. I want to wedge it in here at the beginning and call it No 1. I am fascinated by other people, and I readily learn from them. Why? Well, these adults, they provide consistency. They're the ones who are going to be giving me stimulation. They're stabilizing my environment for me. In an environment that can change so much, that consistency that they provide allows me to focus and learn, and it all works together.

Beth: Right. It works together in the context of that relationship. I know we've really been talking about seeing it from the child's perspective, but I want to jump to the other perspective for a second. It's important for us as adults to remember that this is a relationship, right? We're not just providing for babies. We're in a relationship with them and listening is a huge part of that.

Dawson: Absolutely, absolutely. Yeah.

Beth: Right. I mean listening in the broadest sense here. I'm talking about really paying attention to those babies' – to their cues, to their body language, vocalizations. They are talking to us with their behaviors. We like to say their behavior has meaning, and they're using that to communicate with us. Learning to recognize those behavioral cues, that can be immensely helpful to us as adults.

Dawson: Absolutely, yeah. They give so many of them. I mean, we've all had that experience that we're reading a book to a child, and they are just not having it. [Grunts]

Beth: Right, exactly. This means we probably missed some cues. They might have been turning their head away, maybe there's some eye rubs. A yawn, any number of things, right? We probably missed some cues from them.

Dawson: Absolutely. But in learning to recognize these behavioral cues, home visitors can help families do this. Again, it's different for every child. but as you learn to recognize these behaviors as communication, it's a real gamechanger.

I mean, it opens a whole new window into the child's world. Suddenly, you're better able to see from their perspective. In our viewers guide, we have listed some resources that will be helpful for you if you want to learn more about understanding children's cues like these.

Beth: Yep. There's also some prompts in there too for you to go back to think about what some of these cues might be. But I'm mindful of our time, and I really want to get us to this last video.

Dawson: Yes. OK. We are going to watch this. Here we go.

Beth: Listen too. Use that viewers guide to write down what you're observing about this little one's skills and her developments. You know, what central domains of the ELOF, that early learning outcomes framework -- what would you think are being supported as she explores?

Dawson: Excellent.

[Video begins]

[Children chattering]

[Child babbling]

[Video ends]

Dawson: I love that. [Laughter]

Beth: So good.

Dawson: Yeah. The thing that I was noticing this time watching it was the child's physicality. It made me just remember in this first year of life, motor development is just profound.

Learning where your hands are and how to use them holding the head up, rolling over, crawling, toddling all of those things are huge, huge milestones. It reminds me that all of the different kinds of development during these early years are really tied up together.

Beth: Yeah. What do you have in mind there?

Dawson: Well, babies have to learn to use their bodies. As they do, they also gain more control over what and how they sense the world. Like we were talking about before, you can't reach for that toy for a while. But then when you can, suddenly you have access, and the ability to push things away too if you need to, if you need to calm down or if you need less stimulus. This is all developing together, this physical agency, the ability that they're developing is interdependent with these other things that children are developing during this first year.

Beth: Right, yes. So well said, and backed up by our research too. You know, when I was watching this little girl with a book, it reminded me of this study out of New York University. They found that infants' ability to understand three-dimensional objects, like this book, was closely related with their ability to sit.

Dawson: What?

Beth: Right? I mean, so you might not think these are linked. What they did was they measured infants' ability to or how much they manipulated objects, both before and after they were able to sit. In this study, those babies were about four and a half months before and seven and a half months when they were able to sit. They found that once infants were sitting on their own, they manipulated objects a lot more.

Dawson: OK, that makes sense, of course.

Beth: Well, right, and so but because they can do that. Because they can manipulate them more, they're gaining this more sophisticated understanding of object dimensions. That it makes sense when you think about it, but you wouldn't initially think that physical ability like

sitting has much to do with understanding dimensions. I love this. The researchers concluded the developmental history of a new skill could have a surprisingly twisted and nonobvious path.

Dawson: Surprisingly twisted and nonobvious. I love that.

Beth: I thought you would, Dawson. It really segues nicely into something in the video that we've already touched on, but I want to bring us back to it, and that's language development. Here too how language development happens is actually pretty nonobvious.

Let's start by talking about this this child's vocalization.

Dawson: Yes, it is so cute.

Beth: It was. I couldn't help smiling listening to her just babble away. But she was also doing some really important experimentation. As you're vocalizing, she's playing around with her voice in different ways. You coo and then you babble. We actually know that this is true for infants who are deaf, too. They babble using their hands in the same way that hearing babies babble using their words.

Dawson: That makes so much sense to me, because we've been talking about learning through imitation. That's exactly what's going on here. When dad turns the pages, he makes noises. I'm going to try this too. It's again, learning through that experience. Reminds me teach language to babies. They just pick it up from the environment listening and imitating and experimenting like she was doing. That's how they learn. It's one of the key differences between how we teach children language and how adults learn language. It's interesting.

Beth: Right. Yeah, it is. Children are listening to language long before they know what sounds actually make up words. They have this incredible ability to actually segment language into the sounds that make up their home language or languages. They can recognize what sounds happen more frequently, and what sounds are more likely to be paired together.

Dawson: It sounds to me like you're talking about statistical learning.

Beth: You got it. Now I don't want everyone to go running because they hear statistics. We've got a few slides here to help get this idea across.

Dawson: OK, here we go.

Beth: Read this sentence. I want you to think about how we use language as adults. The sounds and the words run together. There's no clear gap like this this sentence, right? It might have been hard for you to read it, but you could do it. But think about a child. This is just a stream of sounds to them. How do they learn where words begin and where they end? We know from statistics that some sounds go together and some sounds don't.

Dawson: We need to do statistics on these sounds to break them apart.



Beth: Right. That's right. Now there's this massive sound on your screen. Researchers played this, it's made up of real made-up words, and then other made-up words that aren't likely to be paired together. They play this for eight-month-olds with no pauses, so just one syllable after the other. I'm curious, can you pick out the words by looking at this mass of sounds?

Dawson: I cannot.

Beth: I cannot either. But infants could tell after just two minutes of listening. We have color coded here just what one of those real made of words were. Infants could tell which combinations of sounds could actually be real words, and which ones couldn't. This suggests that they are processing sounds statistically.

Dawson: This study is amazing to me. I love this study. It's incredible to me that these individual words can be picked out of just this long stream of sounds. But it makes sense, right? It makes sense as an explanation for how children are able to go from not knowing language at all to knowing it. It's incredible.

Beth: Right. I agree, it's completely amazing. It's been replicated. Other researchers have found the same thing. Really, it reinforces the importance of talking to infants. Those early experiences with language are really setting the foundation for their language development.

Dawson: Yeah, and I would like to say a word here for the dual language learners out there. When you remember, newborns do not understand language at all, but they can do this kind of statistical processing on any sounds that come into their experience. It will work on any language or multiple languages. It is an unconscious process. It can be used to learn any language and again multiple languages that are in a child's environment.

Beth: Yeah. So true. Infants hear all the sounds of all the languages on Earth. As adults, we cannot do that

Dawson: Yes. Can we pause here and just say that again? Infants can hear all the sounds of all the languages on Earth. It sounds like a metaphor, but it's not. They have the ability to do that. They can learn any language if it comes into their experience. I know that some people worry that learning more than one language will confuse a child. Not at all. Children's brains are filled with this statistical learning in there. They just know how to do it, and so they can use this process on two languages if they're in the presence of two languages or more if they're in the presence of more.

Beth: Right. One of the things Head Start emphasizes is that for children who are dual language learners, building that strong foundation in the home language, so education staff can encourage families to speak their home language. Assure them learning multiple languages is something that baby's brains – they are built to do it.

Dawson: Yes. What about children with disabilities or suspected delays? Should we say something about that? Yes. Some families and education staff, they worry that a child with a learning disability will be somehow confused by having multiple languages.

Beth: Yep, this is another common concern that we hear about, but research shows that all children can learn multiple languages to the same level of ability that they would learn one with the proper supports. I think I'd like to spend just a little bit of time here talking about some effective practices that help all children learn language. The first one is to speak to children in the language that you are most comfortable with, that you're most comfortable speaking and encourage families to do the same.

Dawson: Yes. Can I add that this is true for extended families as well, community members even. But grandparents, feel free to speak a different language to your grandkids. The important thing is that you use the language you are most comfortable with. Hearing rich, meaningful language from anyone really does benefit a child. In this case, it would help benefit that relationship too, right? It's a win-win.

Beth: Right. Great. Use parentese when you speak and read to infants. Remember, that's that exaggerated singsong tone, slowed down speech.

Parentese applies to everyone. It's a term parentese, but grandparentese, home visitorese, however you want to do it. That again helps families do the same. The other one I really want to mention is pausing during back and forth interactions to let infants respond. Remember that response might not be something verbal. It could be nonverbal, it could be a head turn, where they shift their attention, some sort of nonverbal cue. Really hone into that. Again, help families to do the same, to recognize these cues. Remember that babies are processing language even when it doesn't look like it. They learn language by hearing language. Talk and talk and talk with them some more.

Dawson: Absolutely. Talk, talk, talk, I have one more practice that actually fits in with that. That is narrating. It's a great practice to get into. If you just narrate your day when a child is in your presence, it makes things a lot more interesting. It brings a lot more language into the environment, but also it makes the invisible things in the environment visible. For instance, thoughts and feelings. We have not talked much about feelings during this episode. We will in future episodes, I promise you. But emotional development is definitely a part of this first year. Beginning to identify emotions during this first year, talking about feelings can really help a child.

Beth: Right, agree, making the invisible visible. I love that. That can mean being openly expressive with a child. Narrating not only their feelings, but sharing your own can help them too. You know, if you say like, "Oh, I know you're feeling sad. It's hard to say goodbye to mom. But she'll be back later." You know, actually talk that out. Even if the child is too young to understand, one, they're going to pick up on your emotions and those different cues present in your voice and your body language. But you're also setting the stage for their later language learning and learning about emotions.

Dawson: I like how you wrapped that back to body language, using the voice and things. Those other kinds of communication are so important. Yes, use those emotion words, but use your other facilities for communication as well.

We have a lot of wonderful, wonderful tools for communication. This example ties together our three principles so well. Let's look at them again. I am fascinated by people, and I readily learn from them. I learn through experience, and I need help getting access to the things that will help me learn and help me grow. Finally, I need help navigating change and regulating my emotions. All three so important.

Beth: Yeah, and I really like them because they're interdependent, but there's only three so they're manageable. We can remember three, right? Can we say that a relationship with the adult caregiver is absolutely primary here?

Dawson: Yes, absolutely prime. Most important thing, absolutely hands down.

Beth: Right, but it also has to be understood in the context of the other two. Think about a child who's had a big day with all these new experiences. The best thing to do might be to give that child time to recharge. It could be playing soft music, quiet books, letting them sleep. Effective caregiving does not mean actively engaging a child all the time.

Dawson: No. It depends on the child's temperament as well. Right?

Beth: Oh, right, absolutely. But we will cover that next time because we are almost out of time here. I just want to leave everyone with some reminders to tie everything together. Caregiving is a relationship. A big part of that is listening to the behavior states and the body language of babies, being aware of changes and being ready with new and enriching experiences. This really all this depends on being tuned into each individual child. Treat children as an individual with their own needs and preferences. Remember, we're not designing children, we're helping children grow. Dawson, any last thoughts?

Dawson: You know, not designing children, helping children grow. I love that sentiment. I can only add here at the end a big thank you for everyone who's watching this and for all of the work you do to nurture children and support children and their families. It is such important work. We really, really deeply appreciate it. There is a survey after this when we are done, after which you can download your certificate of completion. Please do take a moment to do that survey as well.

Beth: But first, a few quick plugs. Our National Center is hosting the 2022 Disability Services Coordinator Institute. This will be a virtual two-day professional development opportunity that is relevant to everyone in all your roles with a focus on coordinated approaches and inclusive practices through the lens of race, equity, and belonging. No matter your role, again, I encourage you to check it out and register if you haven't already. There'll be certificates of completion as well as CEUs available. Please share this information and save the date.

Dawson: Yes, good stuff. I think that brings us here to the end.

Beth: Right. We'll be back next year for the second installment in this three-part series on April 21st. We'll be looking at development from ages one to two.

Dawson: And helping you see it's from the child's perspective.

Beth: Yes, exactly. Thank you so much to everyone for joining us today. We appreciate you and all the work that you do. We'll see you next time.

Dawson: Yes, thank you very much. Bye-bye.