An Early Educator's Look Into Brain Development for Infants and Toddlers
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- [Moderator] Hello, and welcome to Early Childhood Education at Continued.com. My name is Jessica Lewis, and I'm excited to welcome you to today's session titled An Early Educators Look into Brain Development for Infants and Toddlers. We are very happy to welcome Dr. Lauren Starnes, to share her knowledge and expertise with us. I do wanna let you know while this course is specifically focused on infants and toddlers, there will be another one in the library that specific to preschoolers and their brain development, preschoolers and other early childhood. Before we get started, let me tell you a bit about Lauren. She is an expert in the field of early childhood education, having dual Doctorates in both Child Development and Educational Leadership. She currently works as the Vice President of Early Childhood Education Research and Development for Primrose School Franchising Company. You can read more details about Lauren on our website. Welcome everyone, we are so happy that you were here. Lauren, I'm gonna turn it over to you now.

- Okay. Thank you so much. So today we're gonna be taking an early educators look into brain development for infants and toddlers, but this session is really holistically for anyone who works with infants and toddlers, children between the ages of zero and two. So let's get started. Here are my disclosures. Our learning outcomes for this session are as follows, after this course, participants will be able to identify and describe critical windows of brain development for infants and toddlers. Describe the physical environment in its ability to support infant and toddler brain development, and describe adult interaction necessary to maximize infant and toddler brain development. When we think about an infant and toddler, a young child entering the world and their first two years of life, we can really identify four main jobs, if you will, of being an infant and being a toddler. The first of these is to make sense of the world. When a child enters this world, every experience is new. Every site is new, every sound is new, and every experience helps shape the child's perception of the world around them. It is this constant cause and effect of what's happening and what happens following that shapes how a child comes to understand the world around them. And this continued

shape of experiences continues through early childhood, but it gets it start in those first two years of life. The second main job of being an infant and toddler is to discover the power that the child's body has and to really hone those motor skills. It's no surprise to any of you that work with infants and toddlers, that there are quite a few motor skills that are required in those first two years of life. From an infant lifting their head to lifting their torso, to sitting up, to stepping, et cetera. It is constantly about child exploring the world around them, exploring what their body can do, how their body can move in space and beginning to gain control of them. And we see those skills continue to build over those first two years of life. The fourth job of being an infant or toddler is to connect with others. The infant brain is wired for survival. From the time that a child enters this world, there's a constant seek and find of who is around me, who can I trust and who provides some support to meet a need that I may have as a young child entering this world. There's a constant look for social connection. How do I connect with others? And how do I begin to communicate that in a way that my needs are met? In fact, communication is the fourth job of being an infant and toddler.

Learning to communicate fully, of course, for an infant, that communication begins as cries and the cries convey a need that the infant has, but as the child continues to grow and progress over those early years of life, that communication skill evolves into nonverbal, into facial expression, into emotional expression and into verbal expression. And it's a child learning how to express their needs, their wants their desires, to gain the attention and to gain the support and to support that child physically, emotionally, socially, and cognitively, as we'll continue to explore brain development. You think about an infant and a toddler, we're really talking about minds in the making, the continued shaping of brain wiring. Underneath of all of the four jobs that we just discussed, there are brain structures that are evolving, that are changing, that are shaping, and that are being pruned and are refined to allow the child to successfully navigate those jobs. Between the ages of zero and three, is the fastest rate of brain development in the entire human life span. There was never another time period in a

human life in which the brain evolves and shapes and changes at such a high rate. If we think about brain cells at birth, most of our brain cells are formed before we enter this world. They're actually formed in utero, but the connections between those cells are made during infancy and during early childhood. The connection between brain cells are called synapses, and an infant can have as many as 1,000 trillion synapses in the brain, but they operate on a use it or lose it principle. Essentially the brain enters the world ready to take in a variety of experiences. And if they take in those experiences, those connections are formed and solidified. If they do not, then those connections are lost. It's a use it or lose it principle. In fact, by age 10, when a child is in middle elementary school, they have have as many synapses, around 500 trillion. Now, that may sound concerning to you or not, but what it really represents is a very complicated structure, becoming more sophisticated. Learning how to more effectively communicate within itself. It's about more efficient processing and as we grow and progress and experience the world around us and learn new things, we want the brain to be able to operate as optimally as possible, but also as efficiently as possible, which is what is happening in this first few years of life.

One thing that's important to note is that all babies are born too early. I'm not talking about prematurity, as we know some children do enter this world before that full 40 weeks of development, but even a baby that's born at full term is still too early, if you will, for this world. In fact, if you look at months zero to three, what happens for a newborn infant from time of entering the world three months of age, there's an immense amount of time of social skill development. The infant is still learning how to navigate, how do I express myself? Who meets my needs and what happens? If you look at the amount of sleep that a young infant receives these first three months of life are actually colloquially referred to as the fourth trimester, because there's so much development that's still taking place even after the infant enters this world. And as the infant encounters care and responsiveness from other human beings, from other adults, other caregivers in their life, it's continuing to shape the structures in their brain,

the function in their brain and how they come to make sense of the world. The human brain over the first three months of life, for sure, but certainly over the first 12 months of life grows extremely rapidly. In fact, the brain itself more than doubles in the first 12 months of life. In fact, by the time a child is 12 months of age on a child's first birthday, their human brain is 60% of what it will be as an adult. Just giving you an insight and a look and to just how much is happening over those early months of development. By the time a child is five years of age, roughly the time at which a child enters kindergarten, their brain is full size in terms of physical mass, but it does continue to develop and refine even into one's 20s, even into the college years, not for a young child. As we talked about before, there's the concept of use it or lose it. When an infant enters the world, they have the capacity to learn almost anything. Take language, for example, there was not something different about the brain of an infant who enters this world and learns to speak Arabic or learns to speak Chinese than a child who enters this world and learns to speak Spanish or English or multiple languages. It depends upon what the child is exposed to. And as the child is exposed to new experiences, those connections in the brain are formed. If a child is not exposed to a certain experience, those connections are not formed as well.

And in fact, at times there were some connections that can never be formed beyond that first year of life. We're gonna look at six key areas in the brain of an infant and a toddler that really are the primary foci, if you will, in terms of brain development, over infancy and over toddlerhood. These six areas are a conglomerate of what you see on the screen before you. It's a mix of what we would call critical windows. This is the prime time in the brain development of an infant and a toddler for those connections to be formed for those synapses to be pruned or to be refined in the brain. If a child does not have those connections and those experiences in those early years of life, and they miss that critical window many of these skills will never develop, as we'll talk about in just a moment. Along with that as an optimal environment, we talked before about the idea that everything a child sees, hears and interacts with is shaping experience, is

shaping brain, it's brain function and is shaping the synaptic connections within the brain. The environment itself serves as a teacher for the young child, because what they see and what they hear shapes how they think. And of course, for each of you, there's the responsive teacher, the responsive caregiver, the responsive parent, family member, home visitor, all of these key and all these key pieces are what together allow for the successful brain development of an infant or a toddler. So what are those six key critical windows of development? What are those six key areas that an infant and toddler needs to have targeted experience with in the first two years of life to develop optimally. We're gonna walk through each of these in order and in greater depth, but they are, as you see on your screen, first and foremost, emotional intelligence which is learning again how to develop a sense of trust, how to share how one's feeling, express feelings and also read the feelings of others. There social skills, learning how to communicate wants and needs effectively, but also being able to receive that back. It's a give and take of bonding with others and learning how to depend upon others and to form bonds and trust. Motor development, again, physical control of one's body, both in gross motor skills, big skills, such as walking, but also fine motor skills, such as a pincer grasp or when an infant or toddler learns to grab a small object, such as a cheerio to bring to their mouth. Vision, another critical window.

There's a lot that's happening between what a child visually sees and the wiring in their brain in the first two years of life that can forever impact visual acuity as the child grows and progresses. Communication, both verbal, what we're speaking and nonverbal, reading, body language, reading body cues. And lastly thinking skills, learning how to make sense of experiences and critically evaluate what one has seen, heard, experienced to map it onto another experience, which is what we commonly refer to as learning. So let's start at the beginning, let's start with the first critical window, which is that of emotional intelligence. From the time an infant enters the world up until about 14 months of age, there was a critical window of the infant learning to develop trust. There's the constant give and take of who can I trust, who

meets my needs, who is keeping me warm, safe, healthy, and fed. And that comes from a give and take experience, a responsiveness. An infant learns when I cry, what happens? If I quickly generate a response from an adult, I learned to trust them. I know that when I signal that I need something that adult meets my need. We can unfortunately think of what happens for infants who don't have that experience and who do not learn to develop trust with adults around them. Talking with baby. So telling baby that even your cries are a communication to me, and I'm gonna respond back. And infants need to hear that familiar voice of that trusted adult to begin to auditorily also connect to the sound of that trusted adult to know that when I hear that voice, I know that I'm safe. Reading your emotions. It's really important that adults that work with infants and toddlers understand that infants and toddlers are innately wired to read how we're feeling. Even if I'm smiling and I'm saying happy words, but I'm feeling frustrated. Infants can sense that. And we can tell that by the infant tensing up and responding differently physically.

And the importance of touch. It's important that infants constantly feel a sense of touch. And touch is particularly important for the infant on their feet, on their hands and around their mouth. If you think about this, these are the areas where needs are commonly met. So hands, can I reach out and touch someone and do they reach back for me? Feet? Do I learn how to trust my own body and eventually learn how to bear weight and such in terms of motor mobility? And now of course, for feeding and for communication, it's important during caregiving routines that infants feel this sense of touch that we're touching their feet and interacting with their hands and touching the sides of their mouth and their cheek, because this is a way to show infants that I'm a trusted adult. I'm someone that you can trust I'm responding to your needs and will continue to do so. From 14 months of age, up until pre-kindergarten up, until age four, the critical window of emotional intelligence is a lot about impulse control. It's about that toddler learning that while I really would like to climb on the table and jump off, I probably shouldn't. And we see toddlers go through this where they start to engage in

a behavior, an adult perhaps provide some positive guidance on a more appropriate way and the toddler pauses and makes a decision, "Do I go with my impulse or do I go with the adult "that I trust who's given me some alternative advice?" And the way that we help toddlers form and continue to develop this impulse control is by setting limits, by helping establish this is what we do allow in this environment and here's what's not safe in this environment and being consistent with those limits. That sense of routine and expectation help the toddler develop that emotional intelligence and further develop that sense of trust and connection. It's also important during this period of time that we constantly reinforce accomplishments. It's from the toddler was able to first put her jacket on or is able to take off her shoes. Even though we want her to keep them on. It's important that we reinforce accomplishments of what the child was able to do independently. And then remind the child of the limits of the safety guidelines, the bumpers, if you will, in their environment and being consistent on that. As the child learns that impulse control, it sets the foundation for helping the child learn how to socially interact with others.

The second critical window is social skills. Babies from the time they enter this world begin to mirror responses. If you yourself are a parent or have been around a young infant, you've probably seen that around six to eight weeks of age, you can stick your tongue out at a baby and baby will stick their tongue back out at you. Infants are learning to copy the behaviors that they're seeing and to mirror that response back. They're saying, "I trust that adult "and I'm seeing that behavior, "that must be what you want to see in me." And there's a lot of cognitive focus and attention for the infant on trying to copy that response. From a very early age, infants learn the concept of social interactions as give and take, if they're given the opportunity to do so. And what I mean by that is it's important that caregivers understand that as I'm speaking to baby, I need to pause and help baby understand that I'm looking for him to respond back to me. Unlike adult to adult communication, which is rather quick. You ask an adult a question, you get an almost immediate response. There may be a multi-section pause

for an infant, but as early as three and four months of age, infants can master the of social interaction as give and take in conversation. As we'll see in just a moment. This is the foundation of teaching a young child about conversation, about talking with others and about the importance of verbal interaction. It's critically important as you're interacting with infants and with toddlers, that there's a constant conversation. Keeping in mind that even if the infant or toddler is nonverbal, they have to be given a chance to converse back. Even if that conversation back is cries, squeals, babbles, or one word utterances, it's important that we talk to the infant and toddler, pause, wait for their response, and then respond back to their response. In a give and take or what is constantly referred to as a serve and return pattern. Not only is it important that that social skill is nurtured, infants and toddlers crave that. They see conversation happening around them and they want to be involved in it. Here on this video, you're gonna see a child who was just shy of four months of age engaging with a caregiver in a conversation. And while he's not yet verbal, you can clearly see that this child is being given an opportunity to develop that critical window of social interaction. Let's take a look at this video together now.

- [Woman 1] Silly. Hey Silly. What are you talking about? Yeah. What are you talking about? I'm so happy this morning. I'm so happy this morning. Yeah.

- As we go back to the slides here, you see young Micah engaging with his caregiver, and I hope that you heard that as she spoke, she paused and waited for him to respond back to her. And indeed he did. She then took his squeals or his excitement and responded back. Pairing his nonverbal or his non-articulated language with a verbal response, truly engaging in a back and forth conversation which reflects to us that this child has been exposed to that in the past and has been given opportunity to be part of a conversation. And as you see here, understands the give and take, a critical window for him. As he's continuing to develop neural connections in his brain. The next critical window that we'll talk about is motor development. Motor

development is critical to learning and brain wiring in the first two years of life. It's important that for infants and for toddlers that they have unconfined space, even for infants that are not yet mobile, they need to have room to move their lips, move their torso. We talk a lot about the importance of tummy time. It's exactly for that reason. It's only by allowing the infant and toddler to explore themselves in an unconfined space, that they begin to explore what their body can do, how to control their body and bodily movements, can reach and touch new items and new things. They can see different things, be exposed to different auditory stimuli. It's really important that infants and toddlers are encouraged to move, encouraged to reach for items. When an infant's reaching or something and they can't quite reach, to give them a chance to try again before we place it in their hands, allowing the toddlers to move and run and jump and even with safety measures in place to climb.

This is all again, helping the child learn not only what their body can do, but how they're able to control it. And those motor development skills are setting the foundation for a lot of hard wiring in terms of what will eventually become even more refined motor skills, even more refined fine motor skills, handwriting, et cetera. Unconfined space is very important and you can see here the amount of pleasure that the young children get in that as this little one crawls through a crawling tube. The next critical window was vision. You probably have noticed if you've looked at young children of late, you're seeing more and more infants and toddlers wearing glasses. This is actually a result of a lot of interesting brain research that's continuing to come out of the pediatric medicine community. The child's visual wiring, meaning the connections of how do I see, make sense of the world and process it in my brain, that refinement of visual wiring ends at age two. And so it's really important that the young children have opportunities for visual screenings early because it allows medical providers to intervene with visual support when young children are not necessarily seeing the world as clearly and crisply as we would like them to. Children have to be able to have that wiring, to take in a three dimensional and four dimensional world. You've probably

seen that the infants and toddlers are discouraged from any screen viewing, computer viewing, TV viewing, that's for a lot of reasons. But one of it is for visual wiring. When I look at the computer or the TV, I see the world two dimensionally, it's very flat. That does not allow me to make sense of depth. And it's important that I'm able to make sense of depth because that will eventually impact how closely I stand to another person when talking with them. How I'm able to maintain balance when I'm walking, how am I able to maintain and perceive depth when I'm moving, et cetera. Young children need opportunities to see different items in a three dimensional, four dimensional world to begin to wire their brain for depth, for color, for texture, et cetera. It's important that we expose young children to a variety of appealing colors. You've probably heard that infants enter the world seeing the world in black and white, and it's true. But the rods and cones in their eyes, which allow them to see color develop rapidly. And it's important that we expose infants and toddlers to a variety of colors. I don't mean to overwhelm their environment in a plethora of colors.

But for example, to expose them to outdoors, to nature where they'll see different gradients of greens and browns and yellows that they're not gonna see in an artificial environment. To support a variety of textures, to allow the infant that might not be fully mobile but to have tummy time on different surfaces so she can see the hardwood floor, she can see the concrete floor, she can see the textured carpet and begin to make sense of not only the texture of it, but also the depth of this as well. Again, so critical window, motor development and vision. Communication, well we've talked about already. Communication actually crosses a lot of the other critical windows, but communication itself is a critical window of development in the first two years of life. Young children need to be engaged in conversation and to hear music and to be sung to, and to be read to because the more words a child is exposed to the greater their vocabulary. There was a distinct difference in the longterm literacy development of an infant and a toddler who's been exposed to rich vocabulary. The more words a child hears, the more sounds they hear, the more they're able to map those onto eventually

acquiring language, acquiring phonics and learning how to read. By 18 months of age, if we look at toddlers who have chatty caregivers, and I mean caregivers who like the teacher you saw on the prior clip, engage the infant, engage the toddler in conversation. By 18 months of age, toddlers who around chatty caregivers have almost 200 more words than their peers. That does not necessarily mean 200 words that they speak. We're talking about an 18 month old, but it means that they understand and are able to process about 200 more words. So I'm able to tell that toddler, "Can you go find your coat. "Can you put your hands in the sleeves. "Can you flip your coat over your back. "Let's put our shoes on our feet." All of these are words that that toddler would understand because they've heard them. By age two, children who are around more talkative caregivers have almost 300 more words. It's important that young children are exposed to a word rich environment and hear words beyond what they're able to speak. In fact, we should always be talking to infants and to toddlers, and even to preschool aged children at a level just higher than what they're able to communicate.

Using new vocabulary words that challenge them to make sense of new words, map them onto old words that they know and acquire a new sense of learning. It's important with an infant and a toddler that we're labeling items in their environment that we're pointing out everyday things like the glider, like the blocks, like the diaper that we're showing them visually what we're talking about, and we're telling them what it's called. Infants and toddlers need repeated exposure to words before they learn to master them. And even more exposure to words before they're able to articulate them. Children will always understand more words, receptive vocabulary, than they're able to communicate back, expressive vocabulary. So we wanna keep the environment very rich with language. It's important that we not use baby talk, even when it's very cute. The toddler that says that he wants more teas, but he's actually saying he wants more cheese should hear the word refer back to him correctly. "Okay, Eli, I hear you. "You would like more cheese? "Let me get you more cheese. "One piece of cheese, two

pieces of cheese. "Can you tell me, thank you?" Again, taking the child's attempt to use the word and expanding it, adding more words around it, you probably saw, I do it all the time even though my children are older. Using baby sign where it's appropriate to give children additional ways to communicate, but constantly making sure that the environment around the child is rich with language. That we're using the correct words, that we're articulating our words and that we're expanding language. Now, I made a note earlier that it's important for children to also hear music and to hear song that is critically important for a lot of reasons, including longterm mathematics development. But that does not mean that we should play music as background noise. Many adults enjoy working with background noise because we're able to distinguish between conversation and music as background noise, infants and toddlers are not. In fact, when music is being played as background noise and adults are attempting to talk over it to the infant and toddler, they have a large difficulty in being able to pay attention to one or the other. And they'll go from hearing the adult to hearing the music, to hearing the adult, to hearing the music, neither of what you're creating a cohesive environment. Play music with infants and toddlers, sing with infants and toddlers.

Absolutely. But when you're doing so, the music and the song should be the focus. And when the focus is gonna be on conversation or a different type of play interaction. Music should not be played in the background. In the last critical window is thinking skills, cause and effect. When I do this, what happens? You recognize the shape sorter here on the picture. Infants and later toddlers come to learn what happens when I put the right block through the right hole, solve simple problems. How do I stack two blocks on top of each other? For the infant, I have a toy in each hand, how do I pick up the other toy? I have to learn to let go of one to grab another. It seems simple, but this everyday problem-solving is helping that infant brain learn to make sense of when I do this, what happens next? And it needs to be built with authentic experimentation, allowing a lots of hands-on learning. Infants and toddlers need to be able to see, feel, touch and at times mouth, taste what's around them to make sense of what's

occurring. And as you see, when toddlers move into beyond age one around 18 months of age, they'll begin to engage in pretend play where they grab the pretend banana and hold it to their ear pretend like it's a phone. And what that's showing you is that the child knows that banana is not a phone, but they've come to associate a banana as an item, a phone as an item, and now they can play pretend, they can actually see an item in their head and substitute it for something else. Pretend play is actually very high level play and infants and toddlers should be encouraged to engage in pretend play. Infants and toddlers should be challenged with simple memory exercises. For an infant it might be as simple as taking a stuffed bear and hiding it under a blanket and asking the baby, "Where did the bear go?" Young infants will look around and not know where it went. It's called object permanence. But an older infant will learn to lift the blanket and find the bear, showing you I remember where the bear is, and I remember and have control over my body to retrieve it. All these toys and play activities we commonly engage with their infants and toddlers are not just about fun. They're really about helping that infant brain come to make sense of the environment and develop some critical cognitive systems, which continue to build as the child grows and progresses and learns additional content as they move into preschool, K-12 schooling and beyond.

Magda Gerber has a great quote, which couldn't be more fitting for what we're talking about today. "Be careful what you teach the child, "you may interfere with what he is learning." And the reason why I have this quote on the screen for you here is this important that as we as adults think about what we want to teach the infant and what we want to teach the toddler. That we take the time to pause and first observe, what is the child already engaged in? What is the child already learning? This is actually a picture of my youngest son, 10 years ago, when he was just a little guy. But you see you're pointing to a pine cone. If I didn't take the time to stop and observe what he was already learning, I might've been pointing out the colors of the autumn leaves and pointing out red and green and yellow to him and not paying attention to the fact that

he had already found another item and was using this tactile sense to touch and explore it. Pine cones, as we know are sharp and he had to quickly pull back and learn, we don't touch this item quite as hard. But he went back for it and adjusted his touch and grabbed with a softer grab the second time around, showing that he had learned about the experience. So be careful what we're teaching. We wanna to first observe what the child is already learning and already doing, and then find meaningful ways to push in and build additional exposure to build additional critical windows. Critical windows, optimal environment, and a responsive teacher. This again is the trifecta of what leads to optimize brain development for that infant and that toddler. So what is an ideal learning environment for an infant and or a toddler? I'm gonna take you through a few exercises, looking at some videos where you're able to explore the world through the eyes of an infant or a toddler, and what I want you to be thinking to yourself is one, where are we? What's happening right now in this situation? And what critical windows are or are not being supported? These examples may surprise you. So let's take a look here first at the first video. Again, I want you to ask yourself, where are we? Which critical windows are being supported? And which critical windows are not being supported? Let's take a look at this video now.

- [Woman 2] Pig, pig.

- And of course the zoom out at the end likely gives it away. But you got a view there from an infants perspective in an exerciser. Hopefully you were able to identify that it looks a little different when you look at it from an infant's perspective, which critical windows are or were, or were not being supported. Let's talk about emotional intelligence first. Was there a sense of trust that being developed? Well, the short answer is no. There was no interaction with an adult there. In fact, an exerciser is largely an isolated interaction. It's largely the infant with the infant's own self engaging with what's around them. So certainly not supporting emotional intelligence there. How about social skills? Again, it's an isolated interaction. There was no give and take of

conversation. In that situation, again, it was the infant engaging with him or herself and the environment. Motor development? Yes and no. Now oftentimes exercises are touted for helping support young children learn to stand, but they actually don't. The cradle that holds an infant in an exerciser has their legs at such a bold stance so the infant would not be able to bear weight in that same position without the brace of the seat beneath them. Certainly there is opportunity for the young child to reach and grab items developing some fine motor skills, but if you notice everything is about six inches from the child's face, so developing fine motor skills, but not in the same extent. Certainly if an older infant were in the apparatus and we're jumping some motor skill development there but we talked before it's important for young children to have free movement in their environment. And the exerciser does not allow for this. Vision, while there were a variety of colorful toys at infant eye level, you might be surprised to notice that an exerciser has most of those toys point away from the baby.

So the adult caregiver looks in and sees a lot of interesting things. The infant on many exerciser designs sees the back of such toys. As far as depth, everything again is at a very short distance. So not a lot of opportunity to necessarily gauge depth, certainly some support for color perception, some support for texture perception, communication, again, minimal. There was not really much of that going on and thinking skills again, minimal. There may be some toys there that might have a little miniature Bead Maze that would allow for some basic cause and effect but probably not supporting as many critical windows as one might think. Let's look at a different example. Here we're gonna again, ask yourself, where are we? Again you're from the perspective of an infant or a toddler and ask yourself also which critical windows are or are not being supported. Let's take a look at the video together now. So hopefully you were able to figure out where you are. That was the perspective from an infants vantage point in a swing. I should note most infants swings have variable speeds to them that infant swing had a variable speed up to a six. And that was set on a three. So give yourself an idea of what a four of five or six would have been like for that infant.

Emotional intelligence, sense of trust. Again, minimal there's no adult interaction happening with the child whatsoever. Social skills? No. In fact, you probably heard that infant did begin to verbalize and began to make coos and make different sounds. But there was no one there to interact with the child. Again, was very isolated in that example. Motor development? No. To be in a swing, a child must be restrained from belly button down to legs. So there's an opportunity for free movement of motor in that example. Vision, again now, even at a relatively low rate of speed in the swing the infant is not able to focus their eyes on what's happening around them. And you saw again as the teacher walked by but the infant would have had a difficulty and they gotta focus their eyes on a moving person as they themselves are moving in a different direction. Communication again no, quite minimal. And thinking skills again no, quite minimal. Again, you might be a little bit surprised. Let's look at another example, same questions. Where are we? Which critical windows are, or are not being supported? Let's look at this video together. I would remind you the point of this part you're looking for the vantage point of the infant.

- [Woman 3] You wanna play with

- This one may have been harder to guess. I'll tell you your clue was the sound behind you. And I don't mean the caregiver and teacher talking behind the child. This is actually an infant's eye view from a bouncy seat. And you probably heard the vibration of the seat as it was vibrating. Emotional intelligence, no, no sense of trust in terms of who's gonna meet my needs in that moment. There would have been an opportunity perhaps if the infant teacher had been sitting in front of the baby. Social skills again no. Opportunity exists again if the adult had been sitting in front of the child. Motor development, no, in fact, a bouncy seat actually cradles the infant's head in such a way that they have minimal movement of head from left to right. It's actually part of the reason why many infants will fall asleep in a bouncy seat because they're essentially mobilized. Vision? To an extent. Certainly you saw as the infant turned his head that

you were able to see that he was able to take in more items and many at different levels of depth. The degree of vibration can certainly impact that. But vision was certainly supported to an extent and the colorful quilt in front of him on the infant teachers chair would have given him some interesting textures and colors to perceive. Communication in this example now, there was no adult or other child nearby to communicate with the infant and thinking skills again no. It's important, again as we're thinking about equipment that we're really asking ourselves, what is the goal that we have in mind? I will say all things in moderation. Many of you might be saying, "Oh my goodness, "but I have an extra exerciser in my home. "I have a swing in my classroom. "I use a bumpy seat with a home daycare "that I run." All things in moderation. You're not seeing that you're causing irreparable harm to the infant, but it's important that you're saying, "What is my goal in utilizing this equipment?" 'Cause I can tell you, your goal cannot be brain development, not with those three apparatus. It might be safety for the moment perhaps while a single caregiver goes to warm a bottle. But it's important that we really think critically about why are we using that equipment? And what is our goal?

And again, thinking, are there more effective ways to meet that goal? And the answer is always yes. And that's gonna be through a caring, responsive caregiver as we'll talk about later in the session. One more example here. I'm going to ask you to mentally step with me for a moment into a toddler classroom. So yes, I'm giving you a bit of the answer. And the question I have for you is which critical windows are, or are not being supported? As you listen to this, I would encourage you again, thinking as a toddler to go ahead and stand up in the comfort of wherever you're perusing this webinar. As our music plays you can either stand up so let's enjoy the song and move our body. Kelen, Kelen I need you to I want all of everyone to raise their arms up, out let's stomp our feet one, two. Alana, Alana you need to ... Let me see, let me see, I'm gonna pause. You're probably thinking what just happened. So where were we just now? We were in what I would refer to as toddler herding. Toddler herding is the idea that we can have

an entire group of one year old children engage in a single activity as a whole group and not have total and complete chaos. Toddler herding is counterintuitive. It's actually completely counterintuitive to brain development, whole group activities with one year old children do not support critical windows in the ways that we often think that they do. Let's walk back through emotional intelligence, trust and impulse control. If I am trying to do a whole group activity to a music and movement activity with 12 one-year-olds, for example, it's gonna be very difficult to help those toddlers don't impulse control. In fact, if you are a toddler teacher yourself, you probably know that's oftentimes when there may be pushing or there may be other behaviors that are challenging because impulse control becomes very difficult when I'm highly engaged auditorily, I moving my body and I'm very close to all of my classmates. Social skills? Yes, there is a degree of social skill there. There is a give and take, but for a teacher to try to engage a whole group, it's limited.

Because as a one year old child, I'm engaged in parallel play, meaning I'm engaging with the teacher, but I'm thinking about just myself. I'm not thinking about my peers. And so when that teacher shifts her attention or focus to somebody else, I want the attention to focus back on me. So the social skill development is also limited. Motor development in that exercise would have been engaged certainly if the children were not participating. Vision perhaps would have been engaged if the children were engaged there as well. Communication in that example limited it's pretty much gonna be the teacher offering some corrective feedback and some behavioral guidance and thinking skills perhaps. The important takeaway here is there are better alternatives when it comes to working with one year old children and thinking critically about brain development, small group instruction is always best. And that can be three or four children absolutely but an entire group is generally not gonna lead to the best opportunities to develop the skills that we're looking to target. That's so important that we think about ways to give the toddler choice giving them choices a way to channel that impulse control. If I can either choose to stomp my feet or clap my hands, at least I

have a choice I'm in control of it. But it also helps me control my impulse to do something else that was not necessarily one of the choices provided. So toddler herding is certainly not a practice we want to promote there were better alternatives, again, all things in moderation but when we're thinking about brain development, small group instruction and more individualized care is certainly preferable. And we're gonna take one last look at one last video, again, ask yourself where are we? And which critical windows are or not being supported in this video?

- [Woman 4] Sofia.

- So hopefully you identified that we have two infants engaging in a tummy time together in front of a mirror in the presence of an evidence caregiver. Emotional intelligence, trust absolutely. We saw the one child begin to get frustrated as she couldn't quite reach the toy. And the infant teacher observed first to see what she was trying to do, gave her an opportunity to try again, as her cry escalated, she stepped in and responded and moved the toy closer so the child could grab it. Social skills? Actually in two realms. We see the social interaction of the teacher to the infant, actually three, we see the infant to one another. We see the one child in the flower dress noticing her classmates to her left, but they're also in front of a mirror. And I cut the video short for the purpose of today. But as the video progresses both little girls discover themselves in the mirror. And so there's a give and take there as well. Motor development. We see two children in tummy time with opportunities for free play and neither of these little girls are crawling yet. But they're both able to move their torso. The little one in the striped shirt was able to rotate her body and stretch her arms and reach for different items as she was hitting the rattle against the mat. Vision, we see opportunities to perceive one another, see depth in the mirror, depth with different toys accessible, a variety of colors and textures. Communication, we saw the two infants, both verbalizing towards each other, and then the infant caregiver stepping in and verbalizing with the infant, responding to her vocalization and thinking skills. We see

the children looking at the toys critically little girl banging the rattle against the mat. And then of course, little girl on the stripes turning and noticing the camera and taking in what was happening around her. A much easier activity is tummy time it's infant directed. But as you hopefully are noticing, it also provides a much greater opportunity for these infants to develop some of those key critical windows in terms of brain development. The environment must be rich in motives which lend interest to activity and invite the child to conduct his own experiences. It's important that we look at the environment from the vantage point of the infant and of the toddler and ask ourselves, "Is this an environment that invites the child "to engage and invites the child into a new "and different learning experience?" So what does it take to have a great environment for an infant and toddler? What are some of the key criteria of a great place to be an infant or a toddler? Well, first and foremost, learning opportunities everywhere, and the environment for an infant and toddler should be designed in a way that's safe. So the infant and toddler can truly engage in learning throughout.

For those that are in a preschool or daycare setting, if you're noticing that for whatever reason, the toddlers are really drawn to the back of a shelf, then make it a learning opportunity, think of a way to then provide some sort of a different experience they are in that area that would allow them a new and different experience. Perhaps it's creating felt boards, perhaps it's creating some multi sensory play, perhaps it's just mounting an infant safe non breakable mirror for the toddlers to look at, think about where is there an opportunity for the child to learn? And how can I create new opportunities for the infant and toddler to explore, to touch, to hear, and to engage? Space to move and explore. In any infant or toddler environment it's important that there is space devoted for free movement that may be in the living room with the furniture moved away, where the child can just move about on the carpet. It may be an infant or toddler classroom, some open space in the center of the classroom, perhaps even a safe area for the toddlers to safely climb with fall zones evaluated carefully, but am I providing an area where the infant or toddler can move unrestricted? Unconfined from a device? Free

play where tummy time is accessible for that infant, where there's a safe area for that more mobile infant to pull up and begin cruising and taking steps and where there's safe place for the toddler to move about and explore their environment. Choices, for infants we wanna provide two to three choices. I'm gonna put materials out for the infant to engage in, give them some choice. Perhaps I put out three different baskets, a basket of rattles, a basket with some different noisemakers and basket with some books. And I provide choice. Likewise for toddlers two to four choices. It doesn't mean a carte blanche of choice. If you've ever seen a young child in a toy store, it's overwhelming. We don't want classrooms or home environments that are overwhelmingly varied, but certainly provide some choice. Because that again is helping develop that sense of impulse control. It's helping with the cognitive thinking skill of making a decision, attempt with a problem solving skill of I'm holding the book, but I want the rattle what do I do? Gonna have to put one down to grab the other, et cetera. Elicit curiosity.

Think about inserting items, safe items into the infant and toddlers environment that are new or different. It might be if I discover that this toddler really enjoys the round bouncy ball in the classroom, that I next week bring in a textured bouncy ball that has a different feel to it. I bring in three different balls of three different sizes to allow the child to explore and to question and to elicit those key critical thinking skills of making sense of the world around them. Think of areas for varied interactions. Is this an area where we'll encourage two infants to interact with one another? Is this an area where I would encourage toddlers to engage in parallel play? Is this an area where it'll allow the teacher and the child to engage one-on-one? Is this an active area where the child really has to about? Is this an area where it's more about soft textures maybe have large floor pillows and floor mats and books to encourage quiet play or more still body movement? Think about how it's gonna change the behavior of the infant and toddler as well. And lastly, throughout everything encouraging problem solving and that cause and effect relationship. So whether that's thinking about different toys, are toys that we

don't typically provide the infant and toddler at the same time, varying color, varying shape, varying depth but ultimately allowing the child choice and allowing the child a lot of free movement in their environment. Adults admire their environment. They can remember it and think about it, but a child absorbs it. The things he sees are not just remembered they form part of his soul. He incarnates in himself, all in the world about him, that his eyes see and his ears hear. What we expose a child to in their environment, shapes how they think about the world. It really does deserve that amount of time and attention. And lastly, let's talk about the third. of our model, the responsive teacher, the responsive caregiver. When I'm thinking about a responsive infant teacher, they always observe first, you go back to the Magda Gerber quote, "Be careful what you teach the child. "You may interfere with what he is learning." Observe first, whether the infant is crying, whether the infant is reaching for an item, whether the infant is signing before I do, I need to pause and observe.

Once I've made an observation, then it's important that I acknowledge the need or the discomfort of the infant quickly. I think of the infant teacher who is feeding an infant, how cradling it had been an arm feeding a bottle and a more mobile infant is on the floor and begins to fuss. The infant teacher would need to observe what's happening? What do I see in the environment around them? Oh, perhaps I see that the basket has flipped over and she's having trouble lifting the basket back up to get some other toys I've observed first. The teacher would then want to acknowledge the need quickly. "Mia I see the basket flipped over "and I understand you were very upset. "Right now I'm feeding Gavin his bottle, "but as soon as he is done, "I'm gonna come get that basket for you." Acknowledge the need quickly, even if the need can not be met immediately, verbally acknowledge. When it's time to actually meet the need, tell the baby first, "Madeline, I'm going to pick you up "so that I can change your diaper." And the infant teacher should outstretch her arms and pause part of the give and take of conversation. The give and take of social skills is also the give and take of behavior. You would never walk up to another adult and just grab them and move them. They

would always be verbal exchange first. We want to model that with infants also, "Madeline, I'm gonna pick you up to change your diaper." And I put my arms out outstretched and I pause and I wait. Oftentimes the infant will then outstretch her arms, one, making it easier to lift her, but also acknowledging that she's somewhat aware of the social give and take of our dynamic. Make eye contact. Make sure that that baby is seeing me and that I'm picking her up with the visualization. We don't wanna surprise an infant by lifting them from behind when they might not know what's happening. Then lifting baby carefully under both arms and embracing or lifting them in a cradle position. Again, be thinking about the importance of touch, feet, hands, face. Responsive infant teachers are very mindful of their own emotions, their tone and their actions. It's not uncommon for a class of infants to begin crying and become very upset when they sense stress in their caregiver. Even if the caregiver is not overtly showing it, infants are very aware of that sixth sense or kind of the undertone of emotion.

So remind the infant teacher that the way you're feeling is expressed in your face, in your body language and in your words, and infants are aware of that. If we are frustrated or we are upset, it's okay to say, "Right now I'm very upset and I'm very frustrated "because it's my lunchtime. "and I forgot to bring my lunch today. "I have to think of what I'm going to do." Then at least at that point, my words, my verbal, my nonverbal is matching what the infant is perceiving. And lastly, responsive infant teachers allow babies to make choices. Yes, infants can make choices and it might be as simple as putting two books in front of the infant and asking them, "Do you wanna look at this book or this book?" And pause, the infant might not make a choice and the caregiver might help guide the choice, but allow the baby to make the choice, allow the child to be part of the interaction. Many people who work with babies feel they must do something for baby in order for the baby to be satisfied. What happens when the adult does for the baby is that the adult often forgets to include the baby in the caregiving process. Caregiving is active care for and with an infant, for and with involve the infant.

Observe first, verbally acknowledge, tell the infant your intent, make eye contact, and then safely lift if you need to move the baby. Responsive toddler teachers also support movement, needs and choice. Toddlers have an innate desire to move and to be in control of their environment. That impulse control, responsive toddler teachers honor and respect that they give toddler space to move about safely. And they give choices with some simple limits. You can choose to push the car or you can choose to throw the ball, but we can't choose to climb on the table. Climbing on our tables is not safe. Simple, safe limits. We use walking feet when we are inside, we can use walking feet and we can jump, or we can use walking feet and we can tiptoe, but we can't run. That's not safe. Embrace the child's developing sense of independence. A toddler's favorite word is and will probably always be no. A responsive toddler teacher embraces that developing sense of independence. And when the toddler response no, the responsive toddler teacher responds back by supporting their need for movement and choice.

So the toddler teacher might need to put on her coat and the toddler screams, no. the teacher can say, "You can put your jacket on yourself "or I can help put your jacket on you, "which would you like to do?" They're embracing the independence by setting a limit and letting the child make the choice of who puts the jacket on them. Providing opportunities to be helpful. Again, as part of that toddler desire for independence and that impulse control a way of channeling that is giving them a more prosocial behavior. "So I need someone to help me put napkins on the table. "Molly, do you wanna put napkins on the table?" And giving her an opportunity to be helpful. After a toddler has flipped over three baskets of toys saying, "I need to put the toys back in the basket. "Max, can you put the cars away or the blocks away? "Which one do you wanna put away cars or blocks?" And I let Max choose but I'm giving him some limits of what the behavior is going to be. Framing positive language. So helping the toddler understand not what not to do, but what to do. If I tell a toddler don't run that doesn't help them understand what they should be doing. A responsive toddler teacher would instead

say, "We use soft walking feet like this, "let's walk together." And they show them what to do. The responsive toddler teacher would not say, "No yelling." They would say, "We use quiet voices. "Can you talk in a voice like me? "Or can you whisper?" And they show the child the behavior that is desired. A responsive toddler teacher helps the toddler express emotion. When a toddler's showing escalation or visual signs of distress, the toddler teacher provides labels, "I can tell that you are frustrated. "I see that your hands are in tight fist, "and I see that your tears are coming. "And I know that you're sad "that your block tower fell down. "Can we help build the block tower together? "Or do you wanna walk away and pick a different activity?" Helping the child understand why they're feeling like they're feeling. Maintaining routine is also critical. It allows the toddler to know what to expect and what comes next.

Certainly avoiding herding as we talked about. And when conflict does arise using sportscasting, rather than stepping in intervening, take a third person perspective. "I see that Anna had the doll "and Paulina took the doll. "I see the Paulina has the doll now and Anna is crying. "I see that Anna wants the doll "and Paulina is ..." And you continue to broadcast as they're sportscasting a sports game. By taking the third person perspective and just helping create some objectivity to the conflict for one, it catches the toddler's attention but for two, it allows the toddlers to begin to step out of their egocentric single-minded thought in that moment and begin to see the dynamic. And oftentimes it's a way of deescalating the emotion. Children love and want to be loved, and that they much prefer the joy of accomplishment to the triumph of hateful failure. Do not mistake a child for his symptom, label the emotions. Make sure that when a child is showing behaviors that are challenging, that we label what they're feeling. They're just a child after all. They're not the behavior that they're showing. So in review, there are critical windows of brain development. This brain development is supported by ideal learning environments and responsive teachers and caregivers, home visitors, parents, family members, et cetera. It's important to engage infants and toddlers in conversation with a give and take. And it's critically important to have an

environment with unconfined space. A few references for you are posted here. And I thank you for your time and attention.

- [Moderator] Thank you so much. Lauren, this was amazing such good information. I love how you talked about the pausing in conversation. I think as adults, we sometimes forget to do that. So that's a great reminder for everyone. And then the information about music as background noise, again, just the perspectives with the videos of the swing and the perspectives from the children in the bounce, in the exerciser, those are such wonderful things that nobody thinks about. So I've really appreciate you sharing that with us and bringing those videos so that we can see those things. So thank you so much. I'll look forward to your next webinar and we appreciate you and your time, everyone thanks for watching. Have a great day.