

## **Web-Based Radio Show**


### **Social Groups Part II**

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Good morning and thank you for joining us. Today we are going to cover a topic for which we get loads and loads of questions. The importance of preverbal communication, especially what we call stages 3 and 4 in our progression of emotional and social development and thinking capacities, and this is the ability for emotional and social signaling where infants and toddlers typically, as they are developing, communicate through their gestures. The reason why we get so many questions about this is because it is vital for the formation of social groups and for children learning social skills; it is vital for a child developing a sense of intentionality or will, and it is critical for developing a sense of self before symbols or words are formed. And it is the beginning of communication and the beginning of what we think of as logical thinking or causal thinking, even before there are words or symbols. So these two epics in an infant or toddler's life and for children with special needs – maybe their epics occur later in development. Maybe they occur at ages two, three, or four, or sometimes seven or eight, or even seventeen or eighteen. They are critical whenever they develop because they form the foundation for all the higher levels of communication, thinking, and higher level social skills.

Interestingly, there are many social groups that try to teach social skills to children and ignore these critical stages of development. They may just try to teach children in a rote way how to say hello, how to do greetings, how to open a conversation if children are verbal, or how to be a good listener. But if these are memorized skills, out of context they are like scripts; rules; they aren't natural. They aren't based on reading the other person's facial expressions; the other person's intent, what the other person wants, or what the other person is trying to communicate. It is not natural. As a consequence, in an interaction if one doesn't have these capacities that are learned at stages 3 and 4, which I'll go into in just a second, there is an awkwardness; you are really not "getting it" and the other person knows that you aren't getting it. It will perpetuate an awkward system of communication, and one that doesn't really work; it doesn't facilitate thinking, it doesn't facilitate empathy, it doesn't facilitate self awareness, and it doesn't facilitate a




real awareness of the feelings of others. So none of the vital capacities that we want to teach in social skills, for example, or in social groups, will be learned through a lot of the traditional methods that are used. It is a little bit like the traditional methods are teaching to the test rather than teaching the fundamentals. Stages 3 and 4, as we call them, are there to establish the fundamentals.

Now to go into a little more depth on how stages 3 and 4 build these fundamentals – intentionality, will, sense of self, empathy, ability to mind read or read the intentions of others – how it builds these. First let's just review. We know that early in development, the first stage that we talk about is establishing a sense of security through self regulation and interest in the world. We have talked about that before. Then, a human being goes on to develop the capacity based on their interest in the world for real intimacy. Again, in typical development, we see this in the first half of the first year of life. For children with special needs or challenges, we may see this a little bit later in development. But in either case, the capacity for security, intimacy, and relating needs to be established before we can be concerned about taking on the challenges of real social, gestural, and emotional signaling and interaction.

Then typically in the development of a baby and toddler, between 4 and 10 months we see the development of back-and-forth emotional signaling – a smile begetting a smile; a hand reaching up and mommy or daddy reaches back and the baby reaches back and we have back-and-forth communication. We call these circles of communication. We hear vocalizations and sounds and different emotional expressions – smiles, frowns, looks of surprise, looks of delight, gleams of joy, anger, or annoyance – and we can characterize many subtle shades of emotions in the almost infinite texture and variety of expressions we see in the infant. If each of these is reciprocated by a response from a caregiver, we see back-and-forth.

The key here is to respect the infant or growing child, which may be a 3 or 4 year old who we are working with on the same basic skill. If it is a child with special needs or an autistic spectrum disorder, the key is to build off the child's natural interest and to challenge the child to keep those circles of communication cooking or going because we want more and more and more. If the child is looking at us, we look back with a big delight. If we hear a sound, we make a sound back and try to elicit or entice another sound. If the child seems interested in our necklace, we hold it closer so the child reaches for it. We then, maybe, take it off so the child can reach for it again. With a slightly older infant, we might put our hand over it and the child may give up or may look in our hand and search for it. This could be, again, with a four year old or an 8 month old, and through this little game we have back-and-forth communication involving vocalizations,




motor gestures, or different emotional expressions. This is the beginning of social interaction.

Now what is often not recognized is that this is also the beginning of intentionality. The infant or the 4 year old or the 14 year old is intentional. They are reaching for that necklace or that toy or that cookie (if it is an older child). They are vocalizing to get the caregiver's attention. They are doing something deliberate, intentional, purposeful, and we are doing something purposeful back and as the back-and-forth continues because we are paying attention to what they are doing, always working off of their initiative and their lead – what they are looking at, what they are making sounds about, what gives them delight – in other words off of their passions. So as we are doing that, we see this building. First there are 2 or 3 circles, then 5 circles of communication, then 10, then 15, then 20 until we get to what we call a continuous flow. Then we have an intentional, purposeful being with the beginning of a sense of self. It is not yet a full sense of self – the infant or the 4 year old who is just beginning this process doesn't yet have a full sense of who they are. But they have a sense of themselves with will, with intent, and with purposefulness, and this is the beginning of the process.

In a social group with older children, we'll try to get this same process going between two children. A child may have it with caregivers but not with peers yet. They may have to go through this process facilitated by adults through little games or interactions with peers – giving one peer a little toy or ball that the other one wants and the other one vocalizing or gesturing or reaching for it. “Do you want it? Do you want it?” and we may coach the one who has it to hold it up so the other one can take it. Again, this is the beginning of intent between two peers. So we can see this process then percolate not just in child/caregiver interactions or child/therapist interactions but in child/child interactions. So it is vital to get this process started for this sense of beginning organization of who we are; as purposeful, willful individuals.


It also begins establishing the first sense of logic or causality in the world: I can make things happen. My sound leads to a sound from you. My reaching out leads you to reach back. My smile leads to a smile back. My frown leads to a different facial expression back. My infinite variety and textures of emotional expression lead to an infinite variety and textures of emotional expression back. So we now have the sense of “I can make things happen – the world is purposeful and logical.” We have a sense of causality or logic beginning to establish itself. So all of these wonderful things are happening through the simplest of gestures. In a moment we will talk about how this then develops into more complex interactions and the emergence of a fuller sense of self as we go and progress from stage 3 to stage 4.



Once an infant or toddler or older child can get into a continuous flow of back-and-forth interaction with gestures – smiling, smirking, vocalizing, reaching, grabbing, even looking inside one’s hand for something – then we see a miraculous event occurring. That four year old or that 9, 10, 11 or 12 month old begins solving problems with this new skill. The social signaling and the emotional signaling and the vocalizations and gestures can now be used. If we have a walking child, which we often do by this time, or crawling child, let’s take an example of a 14 month old walking child or a 4 year old walking child, they may take their caregiver by the hand and walk into the toy room and gesture with sounds and facial expressions and pulling and yanking to their favorite toy. Or they may be going to the door and take mommy’s or daddy’s hand and put it on the doorknob and make a facial expression indicating they want to go out to open the door even before they can say the word “open” but they know what open means. Through this process of continuous back-and-forth interaction, we are now seeing problem solving. We are seeing the beginning of scientific thinking. Mommy and daddy are a vehicle for getting that door open or getting that toy. There were experiments done many, many years ago showing that children between 12-18 months could take an object like a chair as a way of getting to something up higher even if they couldn’t climb the chair, but they had the concept that they might be able to use some kind of intermediary to reach some other end. They could problem solve. You see this with our cousins – our primate cousins – they can use tools to problem solve and we’ll come back to that in just a moment.

So now we are seeing problem solving interactions. We are seeing a continuous flow of back-and-forth communication with lots of social and emotional gestures communicated through vocalizations and motor patterns and the way one holds one’s body and the tone of one’s voice. Again, an infinite variety of an even larger range of emotions are now possible.


We also see, as a consequence of this back-and-forth communication; this continuous flow of problem solving interactions, we now see imitation taking on a new form. Even a newborn baby can stick out his tongue when mommy or daddy sticks out their tongue – almost like a reflex reaction. We see little imitative gestures with sounds and movements throughout the first year of life. But now it takes on a more organized social form. A 17 month old toddler may imitate in an uncanny way a good actor would how daddy walks when he comes home from work, or may put on daddy’s hat, imitating what daddy is doing. We may see imitations of sounds and even whole words, so the infant or toddler is a great learner. So is the 4 year old or 8 year old or 10 year old who is learning a skill for the first time. In other words, out of these problem solving interactions comes imitation. When you think about what imitation really is, imitation in



the larger, meaningful, deliberate, social sense; it is really the ability to take many of these interactions that you have experienced and now take it into oneself and do almost both sides of the equation – work both sides of the aisle – in the imitative gesture. So let's say, for example, mom is going “Eeee” and you're going “Ahhh” and mom is going “Ooooh” and you're going “Wooooo” and there is a back-and-forth exchange of vocalizations. Then mom may see you in front of the mirror going, “Eeee, ahhh, ooooh, wooooo” and you are, in a sense, imitating what mom did and what you did. But when you are imitating in a meaningful way; in a deliberate way, it is because you are understanding the nature of what you are imitating. You are not just mindlessly copying. So, for example, mom says, “Open, open” when you are at the door and you are an 18 month old taking her hand and trying to open it and she says, “Open? Open?” and you go, “Op, op, op.” Or you are a 4 year old learning to say, “Op, op, op.” You are now connecting that sound, “Op” to the actual opening of the door. It is a meaningful, problem solving interaction of which imitation is a part. So imitation becomes a part of a way of mastering words but in the context for the purpose of solving problems, or the purpose of pleasing a parent, or the purpose of the pleasure of practicing.

So children, for example, with oral motor problems, we may stand them in front of a mirror practicing different sounds and making a game out of it and making it fun. The child is doing it because it is fun to see mommy giggle and laugh and clap for them as they go, “Eeee!” or “Aaaah!” or “Ooooh!” as daddy or mommy watches the child's tongue move around and they are copying the tongue movements of mommy or daddy as they see it through the mirror. So you go, “La, ba, boo” – different sounds. So imitation is very important because now learning can occur even more rapidly.

We also see something else happening during this period of time, and that is, as these problem solving interactions progress from simple ones to more complex ones that include imitation, we see the 12 month old or the 13 month old progress to the 18 month old level in their way they picture inside their sense of self. The more complex the social interaction, the more complex the sense of self is becoming. So initially it is just a part self – the self that reaches out for a ball or reaches out for a cookie or the self that makes one sound or another or that expresses delight and pleasure with a smile or annoyance with an angry glance. But soon that little piece of me coalesces so that the angry expressions, “Rrrrrrrrr!” and the delightful expressions, “Ahhhh ha ha ha ha!” become part of the same “me.” We'll see the older toddler or the 4 or 5 year old who is mastering this, switch emotional expressivity from anger to delight to curiosity within a few minutes. So they are getting a sense of this is all happening in close proximity; all coming from themselves, all part of the same interaction, whereas initially it tends to be more one way or the other way for a period of time. So it is as though the 12 or 13 month




old in typical development, or the 4 or 5 or 8 year old in development of children with special needs starts off with seeing the world as “part me’s” where happiness and anger may be split off. It’s a different “me” that’s angry and it’s a different “me” that’s happy and a different “mommy” that is nice and a different “mommy” that’s frustrating. With successful development, as you do more of these problem solving interactions, these coalesce so it’s the same “me” and it’s the same “mommy” who can be happy or angry or curious or supportive or frustrating.

As this happens, there’s more and more and more emotions that become part of the “me” or part of the “you” – the “non-me”. You’re beginning to have a sense of self that’s more complete. This is a process that goes on through life. We’re always developing and organizing our identities more and more and more. It’s interesting that this occurs before words are ever used to any significant degree. Sure, there are words occurring with the toddler and the four-year-old may have words, too, even though they’re still mastering this more basic language and more basic capacity for social, emotional development and thinking through non-verbal interactions.

Now, as this is occurring, we see more and more emotions, as I mentioned, expressed and negotiated. Anger is negotiated, happiness is negotiated, curiosity, initiative is very, very important as the child learns to be an explorer. In a moment, we’re going to talk about the implications of this for the development of the child and for the child with typical development and special needs becoming emotionally better regulated.

As we were discussing, the toddler or the older child, or even the adult who’s learning this for the first time, is now in a continuous flow of back-and-forth problem solving interactions. Let’s look at how this fosters emotional regulation and also how it fosters the development of language and what we call visual spatial thinking, thinking about how one operates in a logical, physical world as well. Let’s take the example of a toddler or a four-year-old who’s feeling angry. Or, early in life, the beginning of the first year, the infant or toddler or the older child who doesn’t yet have this capacity for shared social problem solving and continuous flow of back-and-forth interaction, is at the mercy of what we call catastrophic emotions. They’re kind of under the mode of the fight-or-flight reaction described by Walter Cannon years ago. They either attack impulsively or they withdraw and run, or they can also just shut down, become frightened and panicked. It is as though they tune everything out, even their physiologic processes shift at this time.

Now, when they are at the mercy of these catastrophic, strong emotions, there’s little capacity to regulate because they’re still operating almost under instinct, but, as they begin to learn the process of social signaling – back-and-forth interaction, they learn to




regulate their emotions better, they're no longer at the mercy of these catastrophic interactions. How does this happen? Well, let's take a 14 month old, or a 4 year old, expressing anger. Well, they start off with a facial expression of beginning to get angry. They're raising that hand as well as becoming impulsive. But, because they now have the capacity for social signaling, and the caregiver's social signal back, the caregiver responds with, "Oh! Is there something you want? Are you getting mad because you want that?" and they point to the toy that the child is looking at or the cookie that the child wants, or with the older child, the door the child wants open. Now, even without the words, just with the pointing to the door, the child may nod their head "yes" or may point and take their hand and put it on the door. The caregiver may look confused like, "Turn it?" and show a turning motion or scratch their head. The child may take his hand and put it in their hand like saying, "Turn it! Turn it!" and with eagerness. And, as the caregiver turns it, we've turned what could have been an impulsive action with a tantrum – and if we frustrated the child too much, we obviously would have gotten that tantrum – into a problem solving interaction where the child is learning to use social and emotional signaling instead of the expression of anger.

Through the same process all the different emotions come under better regulation. Excitement can now be regulated, the child looks excited and instead of just running wild with excitement because there's a new toy they like or because of the game they like to play, it's part of an interaction, with a lot of signaling going back and forth. So, mommy and daddy are playing with a new bus or the new truck, wheeling it back and forth as opposed to just kicking it or throwing it or throwing it in the air as part of an interaction, so delight and excitement and happiness and exploration are occurring, all part of regulated social interactions.

For the child who's very active and sensory craving, we find that we can counter-balance the child's tendency, as they become too active, we slow down a little bit, but we pick something to slow down with that the child really enjoys so they're motivated to slow down with us. If the child is banging, we bang fast, then slow, then super slow. We make loud noises, soft noises, super soft noises, then the child begins to enjoy imitating our sequence so the child becomes more and more regulated in the activity level, but the activity level becomes regulated because we, as the caregivers, will be good counter-balancers – soothing when the child is agitated, energizing up when the child is self absorbed or withdrawn. So, we're always counter-balancing.

Through this we have more and more emotional regulation. So, in other words, one starts off with, and we see many gifted parents do this just naturally, one starts off with matching the child's affect, the child is eager and gleeful, and our eyes light up, too. And then as they go higher and get too excited, we become calming and soothing, or as




they begin getting frustrated and angry, initially showing we understand through matching their facial expression, “ooh, angry, roar!” we match their sound, then we become not just soothing, but help them find a solution to what’s making them frustrated or what’s making them angry.

But, verbalizing and vocalizing, but that’s more for our consumption before the child understands the word, but it can only help for them to understand the words a little bit, first. So, this counter-balancing, as you’re learning emotional signaling, helps the child learn to become an emotionally regulated little gal or guy.

Also, as we were discussing, not only is the child becoming more regulated, the child is organizing their fuller sense of self, but now as an organized, regulated little person. Now, why is this helping language development? And why is this helping understanding the physical world through visual spatial thinking? And why is this the royal road to symbol formation? In just a second, we’ll tell you.

As we were talking, we discussed how this process of emotional signaling, enables one to become more and more emotionally regulated, because now you can signal your intent; your emotion with facial expressions, with arm gestures, with vocalizations, before you actually put it into action, so you don’t have to hit, you can make an angry sound, you can make an angry look or an angry glance. It gives the caregiver a chance to respond and counter-balance. Now, negotiation ensues because you want that cookie, you want that toy, sure you may still get frustrated, and get disregulated and fly into a tantrum, even the best controlled adults do, but you have a chance for negotiation.

Now, why is this emotional negotiation, or complex emotional signaling and problem solving, lead to symbol formation? Why does that facilitate language and other problem solving skills like visual spatial problem solving? First, let’s talk about symbol formation. When the baby or the older child is under the control of catastrophic emotions, the fight-or-flight reactions, the all-or-nothing reactions, they have what we might call fixed sensory motor patterns. In other words, they see something or they hear something, and they have a fixed action: turn towards the sound, smile back at a smiling face, stick out your tongue when someone sticks out their tongue at you. It’s almost wired, in a sense, in the physiology of the human species, and many of our primate cousins. Now, as you begin becoming a good emotional signaler, you’re beginning to substitute back-and-forth interaction for this fixed see-do or sensory motor pattern, these fixed action patterns. So, now, the toddler, or the older child, sees mommy but doesn’t fly into a big smile or fly into a rage because they’re hungry, but begins signaling. So, the perception or the sensation is separated from the action because we have signaling in




between. So, it's never just purely a sensory motor pattern, it was a sensory affect motor pattern. The infant turned towards mommy's voice because it was pleasurable, turned away because it was not pleasurable.

So, there's always what we call a SAM (Sensory Affect Motor pattern), but the affect part wasn't very well developed. Now, through emotional signaling, it gets more and more developed. Now, we have a sensory affect but multiple exchanges of affect, and then a motor response, even though there are little motor responses all along. As the perception, or the sensation, becomes separated from the action, we have free-standing perceptions. You can perceive mother and have an image of mother separated from the actions you take with mother. Mother may be associated with, ultimately, with many interactions as opposed to just actions. These interactions give you a sense of mother. She's supportive, she's frustrating, she's delightful, she's angry, she's happy, and so am I with her.

So, now we have a picture of mother that's free of the actions that's instead tied to many affective, or emotionally based interactions. This free-standing picture, tied to many emotional interactions is what we define as, guess what, a symbol. What is a symbol of mother? It's a picture of mother that's associated with many, many different feelings that are all organized. A symbol of an apple, it could be an empty picture of an apple, it's green and round or it could be something that's green and round and tastes good, that you throw at your sibling, that you roll and play little ball games with your daddy with. So, then it becomes a fully abstracted symbol, something you really understand.

So, symbols are formed at least according to this hypothesis, because we separate perception from action, we invest, instead, in the interactions that are occurring that allow the separation – the affective or emotional signaling, we're invested in those, it captures our motivation, our interests, our passions, and we have free standing images or perceptions or pictures that we can invest with these affective interactions and problem solving interactions and they become the basis for creating the symbols because we do this with an apple, we do this with caregivers, we do it with peers, whatever we interact with becomes a basis for a symbol of that object.

Now, this is the beginning of language, proper in the sense of the symbolic language world and then we go up the ladder in terms of how symbols are organized and expanded, which we've talked about before at stages 5 and 6. Now, how does this, also, lead to language in a more primary sense? Well, as you're interacting emotionally, and through this more complex social signaling, you're also developing more vocalizations, a broader range of sounds. It's not just "ee," "ah," "ooh;" it's an infinite variety and




textures of sounds to express an infinite variety of textures and emotion. You are becoming better imitators. So, these sounds can now be organized in terms of patterns. In a sense, you're practicing and using your vocal chords and the parts of your brain that will eventually be used for language, as part of these communicative interactions that are communicating and negotiating and problem solving around your social and emotional signaling. As these fall into patterns and as you imitate more and more, these patterns are organized meaningfully, like "Op, op, op!" which is associated with getting the door open, so you're learning "Open" in a meaningful way and a word is used and a word is formed.

So, the infinite variety and textures of sounds that come from emotional signaling allow you to create patterns, and actually at this time, you're becoming a pattern recognizer. The interactions you participate in with mommy or daddy is abstracted because the brain is always looking for patterns, as a pattern. You come to expect mommy to do A, B, or C under certain circumstances. When she's got a happy smile, it's relaxed, you expect her to be supportive and play with you. When she's looking harried and angry and annoyed, you expect her to yell at you or get frustrated with you. It is the same thing with daddy. You can look at his face and tell whether he's going to be a playful daddy or a hungry daddy or a tantrumy daddy. When he walks in the door, whether you are 18 months old, or 8 years old, you learn to be a good problem solver and interacter and good perceiver of others.

Now, as you're becoming a pattern recognizer, you're also recognizing the patterns of your own sounds and seeing how they make meaningful combinations to get the door open or get you the cookie you want. You're hearing language all the time, so you're imitating in now in big gulps, not just little ones. But, it's that ability for pattern recognition through emotional interaction that enables you to make all these different sounds, to abstract the patterns and become a true vocalizer and verbalizer of the words. And, at the same time, you're learning to create symbols so the words begin having meanings.

Interestingly, you kind of know what love is or what the cookie is or what the apple is or who mommy is before you ever learn the word for "mommy," "cookie," or "apple." So, the word becomes the label, but you know it because you've experienced it through these infinite varieties of interactions.


Now, the same thing happens with visual spatial problem solving as you invest objects in different parts of the room, the toy over in that corner, the apple or cookie over in this corner of the room, the door over in that part of the room, you're invested in seeing the pattern of how the whole room is configured because you have emotional



interest in the different parts of the room and what's there. You problem solve with mommy or daddy around the toy on the left side of the room, around the door on the right side of the room, you've looked out the window together. So, what you see in the physical world is invested with emotion; through emotional problem solving. That helps you get a picture of how the physical world works, helps you get the picture of your body in relationship to other people's bodies because you're interacting with them. How does a toddler, for example, or a baby, for that matter, get a sense of their body moving in space in relationship to someone else's body so you're not banging into people all the time? Well, it is through emotional signaling and interacting that you are learning. You bang into it a couple times, then you learn the perception of distance because as you perceive distances better and better, you're having more fun in your interactions with the caregivers. But, if you're not interacting, you tend to get in people's faces.

So, it is through emotional interaction that you're learning where to position yourself vis-a-vis the other people, how to reach for things, because you're practicing all this as part of delightful two-way gesturing. Through the counter-balancing caregiver, you're getting signals when you're doing it in a way that's satisfying and delightful. So, when you bang into mommy, she goes "Aye!" When you come near her and reach out for a hug, and she picks you up, she gives you a big smile. This is how you're learning to negotiate your body in relationship to her body. And you are experimenting with the physical world, too, all the time, learning to abstract patterns, but patterns are only possible if you're already an emotional interacter and problem solver so you can abstract the patterns.


Now, individuals may have gifts more for one kind of pattern recognition than the other. Some have a better ear and pick up the vocal patterns more quickly – what we might call the visual spatial patterns; the patterns of what they see. Others are more gifted in picking up patterns in what they see; they're junior artists or architects. This is what makes life life-like; we all have relative strengths and weaknesses. What we need to be mindful of is that it's emotional interactions that create the context and the meaning for us using our natural gifts. When we talk about empathy and we talk about reading the minds or intentions of others, it's the same process. This occurs through these infinite varieties of textures of problem solving emotional interactions because that's how we're learning to perceive what other people want. We're learning to perceive their emotional patterns; their intentions. Without our own affect signaling, there would be no such thing as understanding another person's intentions because it's part of that two-way communication, so we have to get stage three, a continuous flow of two-way communication – around anger, around happiness, around delight, around assertiveness, around curiosity – cooking. Then, we get it cooking at the problem solving level, and



then that leaves the pattern recognition, and then we understand that mommy wants us to calm down or mommy wants to open the door or doesn't want to open the door. We may up the stakes and throw a little mini-tantrum under control and be called manipulative as we get her to open the door. This is all higher level problem solving skills, all sometimes negotiated without uttering a word. So, what we call theory of mind or reading the intentions of others and even empathy, is learned, again, at these complex emotional interactions.

Interestingly, in the recent NOVA TV documentary on chimps and Bonobos and other primate cousins, they were showing how our non-human primate cousins can solve high-level problems. For example, they can figure out that you need to put water in a cylinder to raise a little sweet pea to the top so you can grab it and eat it. That's a skill that you might not see in a child, figuring that out until seven or eight years of age. So, that nonverbal problem solving, it's easy for the chimps to do it, however. Now, there's also reason that the reason why they had not developed further was they haven't learned to regulate their emotions and it was hypothesized that symbols can help them regulate emotions, if they can label feelings. But the lack of the full development of symbols, even though Bonobo chimps like Pansy are famous for having mastered many symbols on a symbol board. But, that was responsible for their lack of going even further in development. But, in *The First Idea: How Symbols, Language, and Intelligence Evolved from Our Primate Ancestors to Modern Humans*, Stuart Shanker and I proposed there was a different hypothesis: That human beings progressed beyond our other primate cousins because we were more complex emotional signalers and our more complex emotional signaling allowed us to regulate our emotions more, worked better and better in groups, teach one another things, transfer culture from one generation to the other, and apparently while our primate cousins have some culture, in the sense that they are using some tools and they kind of problem solve and they can teach one another how to do things, not to the same degree that human beings can. So, it's not just our high level of symbol formation, which goes way, way, beyond simply creating and labeling words, but, our ability to transfer and teach our culture and build on the knowledge prior generations derives from, we believe, our capacity for complex emotional signaling, which is essential. We think that what separated us in all the evolution was that we were able to do this more effectively with more subtle vocalizations and more subtle variations in facial expression than our other primate cousins.

So, here, we come full circle. Emotional signaling separates perceptions from actions, allows us to move beyond catastrophic emotions, enables better and better emotional regulation, enables a sense of self, to move from a partial self to a fuller, preverbal, presymbolic sense of self, and as we do this, as we progress from the



catastrophic emotions to the emotional signaling from the partial sense of self to the fuller sense of self, as we learn to read patterns better and better through these problem solving interactions, we set up the foundations for all higher level creative thinking, pretend play, and reasoning, the different levels of logic, and thinking.

In our work with children with special needs, often the importance of these early stages are missed and the biggest challenge I often see is the child over focusing on the verbal and not working enough on the continuous flow, so you can always do the two together. Work on the child's verbal skills while we're working on the continuous flow of back-and-forth interaction. So, whether it's a typically developing infant or toddler or a child with language problems, or regulatory problems, or a child with other special needs conditions like autism, the key is to work on getting a continuous flow of back-and-forth emotional social signaling, problem solving interactions, both at the nonverbal and verbal levels, even while you're working on verbal skills or even academic skills.

Thank you very much and this is the end of the show for today.