

## **Web-Based Radio Show**

# **The Development of Consciousness, Sense of Self, and Symbolic Thinking**

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Welcome to our web-based radio show. Thank you for joining us.

Today's topic is going to seem like a very abstract one, but actually is one that is very relevant to all children – children with special needs, but also children developing typically or children with learning challenges, or children with just emotional challenges. And, it is relevant to all of us as adults who are hopefully listening. And that is the answer to the question, “How does consciousness, sense of self, and symbolic thinking originate?” What are their origins? Again, this seems like a heady, abstract topic, but if you think about it, we all want our children to have sense of self; to be symbolic thinkers. We all want them to have, even though it is sometimes ill-defined, a sense of consciousness that includes a lot of self-awareness; a high level of conscious awareness, not just the consciousness that comes with being able to state your name and where you are and be oriented in time and space.

One other caveat, in just introducing the topic, since these are all concepts that have varying definitions, we will be defining them as we go along and discuss their origins – how they develop, especially in the early years of life although we will carry their development on through beyond the early years of life.

I should also add that this question about the origins of consciousness and sense of self and symbolic thinking has been one that perplexed us for the millennia – over the last two thousand years beginning with the Greek philosophers. There has been debate about how to answer this question, and there hasn't really been a satisfactory answer and our neuroscience colleagues have tried to answer it too from a perspective of how the brain works, but that hasn't provided a full answer either. There has been a tendency to get caught up in dualisms – the brain works at one level and the mind works at a totally different level and these are realms of discourse that can't be fully connected, although there have been attempts to locate areas of the brain that have to do with some of these functions.



So we are into “uncharted territories” and we have written about this in our books, *The Growth of the Mind* and *The First Idea: How The Symbols, Language, and Intelligence Evolved from Our Primate Ancestors to Modern Humans* and provided what we believe are if not answers, certainly important clues as to the direction for fuller and fuller answers to these important, perplexing, challenging, and critical questions.


Today we are going to put together what we discussed plus some new thinking about the answers to these questions because it makes the way we work with children and the way we rear our children and the goals for our work and our child rearing practices clear. We all want our children to have a sense of self and a high level of symbolic thinking and a high level of conscious awareness.

So where does it all begin? Well, when a newborn baby comes into the world, they are equipped biologically – partly through genetics and through their intrauterine development – with only a few basic capacities, but these are very important ones. Among these are the ability to experience sensations like touch, sight, and sound. Also, babies have the capacity to experience the beginning of pattern recognition. Over the first days and months of life, they are able to make out the patterns that constitute the shape of the human face; that initially they just see a moving mouth and later what will be identified as eyes but eventually they can see contours of a larger pattern. So there are emerging capacities for pattern recognition and capacities to experience sensations.

Now among the sensations they experience is also those physiological sensations we will later call affects or emotions, but initially they are very basic and we should call them sensations like the sense of being aroused; the sense of when the baby is crying and we say they are unhappy but maybe they are just experiencing “global distress.” When we get a twinkle or a big smile at 2 or 3 months, we may see something that we think of as happiness but we aren’t sure what their inner experience is like.

There are global physiological states that we come to call emotions or affects later. Now what is important to recognize is that as the baby experiences their first encounter with the human world, and let’s picture a newborn baby and their mom or dad holding them in their arms, and let’s say it is mom because often it is, making an interesting sound and moving her face to the left or the right and trying to help the baby turn his or her head briefly to the left or the right and look at where this wonderful and beautiful sound such as, “Oh my little sweetheart, ooooooh, ooooooh, are you so sweet!” is coming from.

Now the baby experiences the sound – that is the sensory experience the baby experiences. The baby also experiences sight – he sees something so they are experiencing something from their senses, and they may turn a little bit to the left or the




right. But if this sound is pleasurable, they are more likely to turn to the right or the left where mom's face is to try to find it. If the sound is aversive – too high for the baby or too low for the baby – or if the baby has sensory hyper reactivity where the ordinary internal voice has a high baby pitch to it, (high voice) “Ooooh, my little sweetheart” in baby talk that is too high but mom intuitively experiments and goes, (lower voice) “Ooooh, my little sweetheart” to a slightly lower pitch, the baby may still find it pleasurable and turn.

Now what this tells us is that the first experiences are what we call the double code – they are double coded. On the one hand, we have the really sensory part of what we ordinarily think of as sensation like sound and sight, but then there is also a physiological sensation; another sensation that we will come to call affect which is pleasure, or what we call “global delight.” There are only a few of these big ones at first. So the experience of mom and her voice – just for simple purposes let's just talk about the sound for a second, is double coded. There is the sensation of it at the physical level as a sound, and a sensation of it at what we will call a physiological affect or emotional level – the delight or pleasure.

Now let's take touch. Let's say mom holds baby's hand and touches it very softly. The baby experiences the physical sensation of the touch and if it is a soft, gentle touch and the baby is not hyper responsive to touch, the baby experiences delight and pleasure in that. If the baby is a little hyper responsive and mom finds the right type of touch, maybe a slightly firmer touch and the baby experiences pleasure, then there is delight in that. If mom squeezes too hard or talks too loud, the sensation may be aversive and instead of delight there may be global distress. But again, we get a double code. The experience is coded based on its physical properties on the one hand, and its emotional or affective qualities on the other hand.

Now the first experience of consciousness according to our model of development we call the DIR/Floortime® Model of Development is one's own experience – the baby's own experience of his own sensory and affective world. If the baby were not heading down a path to be fully human, if we were creating machines, we might be able to create something akin to sensation but not that physiological response we will later call affect or emotion which is distinct to living biological organisms and not just humans but also our cousins in the animal kingdom. But if this experience of one's own internal physiological affective life that we will call the beginnings of consciousness, then the next question becomes how this develops into a fuller sense of consciousness. For this to happen, these global, physiological responses that are physiological and affective at the same time which is a feature of the human nervous system – to experience this; it's reactivity – has to become something more textured; more closer to what we ordinarily call emotions:




pleasure, happiness, delight, joy, annoyance, irritation, assertiveness. How does this develop? As the baby comes to experience this variety of emotions and affects, this inner sense of something happening inside oneself or just happening, becomes more and more visceral and the baby is now experiencing the double code in a more subtle and defined way with sensory experiences like touch and sound and sight and one's own movement such as turning, and also experiencing these affective or emotional responses like delight and happiness and joy at the same time. This combined experience provides a very rich sense of experiences which we will call a slightly fuller sense of consciousness because now there is a sense of aliveness; a sense of vibrance.

How does this occur? Often by 4 months of life, we will see big, happy smiles, we will see babies in rhythm often earlier than this at sometimes one, two or three months of age, moving their arms or their mouths or making sounds in rhythm with mother's sounds or dad's sounds and there is a kind of synchronous rhythmicity to the interaction and the movement pattern, and we begin seeing more textured emotional responses in the facial muscles of the baby. The smiles have different qualities to them. We can say that maybe there are different sensations of affect associated with it. The annoyance has different looks to them. This seems to depend a great deal, however, on the degree to which mom or dad or grandma or whoever else is interacting with little Johnny or Susie is providing this as part of their back-and-forth interaction.

So now the double code takes on a richer quality. The sensory affective part of this coin – the one side being the purely physical sensation and the other side being this physiological, now more purely emotional affective part takes on this more textured quality, but if and only if the caregiver provides the vehicle for this through more textured interaction by varying their voice, by varying their facial expression, by varying the way they interact with the baby. We see this in playful interactions. Babies who grow up in orphanages or in deprived situations, we don't see this textured quality of interaction, and we also don't see a lot of variation in their facial expressions. Often we will see a solemn, what looks like an apathetic look and often low muscle tone may develop in the facial muscles. So instead of seeing more and more subtle emotional responsiveness in the face and movement patterns of the baby, we'll see just the opposite – apathy, global look, and possibly low muscle tone.

As a side note but an important side note, the human being, again due to their genetic blueprint and due to their biological capacities, has the capacity for very fine-tuned facial expressions – has lots of muscles in the face and lots of nerve endings in the facial musculature so they are equipped to be responsive to their environment. But, the environment has to provide these highly textured nuance affective emotional responses because when mom is saying the baby's name, "Ooooooh, sweetheart, you're so




beautiful” and “Ohhhhhh, my sweetheart, look at you look!” and “Wooooow, what a wonderful little smile you just gave me!” there is a lot of variation in the texturing of that voice and the way in which mom may hold the baby’s hand and the facial expressions the mommy is generating that the baby is seeing. So the sensory affective world of the baby is getting richer and richer through these interactions. Where there is deprivation, we don’t see this, like in institutionalized settings where there is not that one-on-one caregiving interaction, and where there is we see more and more of it.

So the baby is able to go from these global responses; these global physiological affective responses that are very similar to what we see in our cousins in the animal kingdom like the fight-or-flight reaction or massive shutdown to more textured interactions, which we see on the upswing between 3-8 months. We see much more back-and-forth subtle responses with different vocalizations, different facial expressions, different arm gestures, but they are all part of this rich sensory affective motoric interchange. So we have the physical sensations of experiencing your own motor movements and touch and sound on the one hand, and then you have the second part of the double code which we can now officially call the affective emotional part because through the textured interactions, these global physiological responses have become more affective responses.


Now human beings are equipped to experience affects initially through the physiological patterns in their own body. But they come to have a life of their own and experience as mental processes as they become more textured and subtle. If you think about our experience – delight versus distress becomes happiness versus anger or annoyance versus mild irritation through the texturing. The more texturing there is; the more subtlety there is to it, the more this physiological responsivity becomes what we define as an affective response or an emotional response. So we are experiencing emotions. But our cousins, the Bonobo chimps and other chimps and non human primates and dogs experience these emotions also.

We, however, may be able to experience a more subtle variety if we watch the way our facial muscles work because they provide the feedback loops that allow us to experience the subtlety of these affects. It is hard to experience a lot of happiness without breaking into a big smile. It is hard to experience a lot of sadness without looking sad or anger without your facial muscles showing that anger. Not that you can’t – you can, but then your stomach muscles will tense up. But usually you will see some part of your body helping you experience that affective or emotional response. So consciousness is now beginning to develop a more textured quality that is the experience of your own sensory affective world.




Now as the infant and caregiver are interacting this more textured way, we see a number of stages unfolding from our initial stage of what we call regulation interest in the world where the baby is just paying attention to the sights and sounds and experiencing these very global physiological affective states like distress or delight to this pattern of synchronous interaction where we see lots of more subtle affects or physiological affects being experienced together with sensations as part of the stage we call engagement around 3-4 months, and then as the baby progresses through the 4-8 month or 9-10 month stage we call two-way communication, we are seeing much more back-and-forth interaction as the caregiver makes this possible through their vocalizations, facial expressions, offering the baby their favorite rattle by putting it on their head or putting it near their mouth and the baby reaching for it and giving a big smile and mommy saying, “Ooooooh, my big little girl (or my big little boy), look how good you grabbed that!” And as we see these more textured qualities to the vocal tone, to the facial expression in the caregiver and the baby, now in a back-and-forth way, we see the baby beginning to take more initiative; the baby beginning to initiate little sound games, little movement games. But each of these interactive experiences has again, this affective emotional quality to it, as well as the purely physical quality of a movement or a sensation. But as it is now a back-and-forth, two-way communication system with the baby taking initiative, the baby is getting a very important sense. The baby is getting the sense of, “I can make things happen – I can make a sound and get a sound back.” We notice the baby’s sound; the baby’s sound has a purely sound quality to it, but an affective quality to it. It is a pleasurable or annoyed or a curious sound. There is a facial expression that accompanies that and yet there is the purely physical part of it of the motor act of making the sound. Same thing with reaching. It can be a gentle reach with a smile on the face. It could be an annoyed, angry, demanding reach like you better give me that. So every movement as well as every sensation is double-coded from the baby’s side and the caregiver’s side. But now it is two-way. It is back-and-forth.

Now what does this mean as the baby sort of initiates the sound like “Uh oh, uh, oh, oooo, oooo” meaning they want that and mommy puts it up and baby gives a big smile and reaches for it. What does that mean in terms of development of consciousness and the sense of self and ultimately symbolic thinking? Well, from a sense of consciousness, the sense of consciousness is now expanding. So consciousness goes from a sense of global aliveness and awareness of the world and an investment in the caregiver as we see with those synchronous, joyful responses at 3-4 months of life to now a sense of consciousness of “I can make things happen;” of two-way communication. But now the consciousness begins to take on the qualities also of a sense of self.



Why do we say the sense of self is occurring here? Along with that is also what we call a sense of will because that is intentionality. Why does that begin developing here? Because as the baby is initiating, for example, with their sound, the mommy's response of holding up the rattle or what the baby wants and the baby gives a big smile of delight and then reaches for it and then gives a sound of satisfaction. As that interaction occurs, there is a little "me" being defined. It is not a full "me" and it is not a sense of "me" of sight, sound, of happiness, of joy, of anger, annoyance, or irritation and all the affects and sensations and all the motor responses that comprise the baby's experiences are not being united yet. But there is a little sense of little islands of "me" because I can initiate being reacted to things that are not "me" from outside me because something holds up that rattle or hands me that rattle. So this is very, very important as the "me" and the "not me" which in this case is recognized as the caregiver – the mommy and the daddy or the grandmother or the daycare nanny or the nanny at home or the sister or the brother – the experience of the "other" is now that emotionally vibrant caregiver who responds to this little island of "me." So we have little islands; little pieces of "me" getting a response from something that is responding to me; that is therefore not "me." This is the beginning of little islands of a sense of self. This is where consciousness and sense of self are related because now there is a consciousness of an island of "me" not just a consciousness of experiencing one's own emotions or affects and one's own sensations through the double code.

Now this is where the capacity of the baby or pattern recognition is very important because the baby's capacity which human beings are wired to just like their facial muscles are wired when they come into the world to experience more textured interactions, if we have lots of nuanced and subtle interactions, the baby begins seeing more and more patterns. So the sense of an island of "me" that has sound with it may also become part of the pattern that has sight too. So as the baby turns and looks for mommy and hears her voice and sees her, the baby can begin connecting the sight of mother with the sound of mother; can begin connecting his or her making a sound to get the rattle, "Aaaaah!" and mommy holding up the rattle and then the delight of holding it and smiling, that may become part of a pattern. So the baby begins recognizing the relationship between what they do and what comes back to them – the interaction; I make something happen – they begin connecting up the different parts of mommy and these islands of "me" begin expanding the connection between the "me" and what will later become the "you" but the "non-me" or "other" becomes expanded and we begin getting a higher level of consciousness having to do with the emergence of these little islands of a sense of a sense of self. So the consciousness goes through these early stages of just a little awareness of the world as a sensory and a global, physiological awareness and an awareness of a deeper sense of emotional connectedness to the world that is part of this




synchronous interaction where there is not yet a sense of self or almost “me” and mommy or what will later be “me” and mommy are part of the same happiness, the same sadness, the same emotional experience to this now interactive pattern where we are beginning to get some definition between the “me” and the “non-me.” Now the sense of self is beginning to form. So this is a very, very, very important development.

We can see how children who have motor problems or children who have problems with taking in sensation or are over reactive or under reactive – they may require a little more practice. It may be a little harder for them to develop these little islands of “me.” If the baby is very passive and has low muscle tone, it is hard for the baby to initiate. The baby may need more inspiration; more wooing from mommy and daddy. They may have to hold that rattle up a little more and say, “Oooh, do you want it? Do you want it?” or find something the baby really wants because it is so hard for that baby to make that sound or move those muscles. So we may have to inspire that baby a little bit more. But if we do that, that little “me” still forms. So that is why we have to tailor to the baby so their sense of self and this expanded type of consciousness begins developing more and more and more.

Then as we get into what we call the stage of shared social problem solving from around 9-10 months going all the way up to 18 months, we get monumental development in the expansion of consciousness – yet another level – as well as the sense of self. And we get important developments in generating what will later become symbolic thinking. So as you can see as we are talking about these early stages of development, the sense of consciousness and the sense of self are not just defined in one way. They are defined as developing capacities; developing organizations of experience that characterize the baby and soon to be toddler.

As we move into what we sometimes call toddler stage, shared social problem solving, these interactions we have been talking about, these back-and-forth communications with the infant and now toddler taking more and more initiative with their vocalizations and now may even be a few words, but again even the words will have a textured emotional quality to them, to movement patterns, taking mommy by the hand and pointing to the toy they want and that will have an emotional quality to it and also a purely motor quality to it. Mom’s response back or dad’s response back will have the sensory quality of holding the baby’s hand or holding the toddler’s hand as well as a textured quality like “Gee you’re annoying me” or “Gee I love to hold your hand and show you where the toy is” etc. So the double code continues, but now the interactions are going on a continuous flow basis – there are 50, 60, 70 back-and-forth circles of communication in a row. Now the baby’s capacity for pattern recognition is growing proportionately. Now all of these sights and sounds and movement patterns and




sensations and the double code – the emotional or other affective side of the coin – the happiness, the pleasure, the joy, the sorrow – even the more textured versions, particularly if the caregiver is providing that back-and-forth interaction with more and more textured qualities, is growing and growing and growing. Along with the growing pattern recognition, we now begin seeing these little islands of what we coalesce through the pattern recognition into a more complete sense of “me” even before the baby can speak to any significant degree or have ideas to any significant degree. So now we are seeing a more complete “me.”

What starts out at the early part of the second year of life is still little islands. When I was playing with lots of babies when I was in my office and a baby was mad at me I was a very different person than when a baby was happy with me. I wasn’t the same “me.”

So now by 18 months, it feels as though the angry feelings and the happy feelings; there is a recognition that these are all part of the same pattern; these are all part of the same “me” and the same “you” or the same “non-me” or the same “other.” So as we get more and more back-and-forth interaction and as daddy is appreciated as a person who comes in with his briefcase and sometimes he is grumpy and sometimes he is happy and it’s the same daddy, or the toddler gets the sense that mommy is sometimes ready for play and other times wants to look at the newspaper and other times is going to frustrate me, all of these becomes part of patterns that the toddler recognizes as they define who they are and define who the other is. So the sense of self becomes defined and the sense of who the key caregivers are; the key others in the baby’s life becomes defined more fully and this internal world is becoming complex and it’s the affective or emotional qualities of the self and the caregiver that offer this definition. So it is the sensory and the motor part double coded with the affective or emotional part.

Now what we have to emphasize here is this only occurs to the degree to which the significant caregivers are providing these more and more textured responses; these more and more subtle interactions. So without that, you don’t get this more defined and more elaborate sense of “me” or “self” and definition of who the significant others are. So the interactions have to be more textured, more responsive, and they require time, relaxation, and lots and lots of interaction or else we see these more global patterns where we see just simpler emotional interactions.

So whether a baby progresses from just these very global physiological emotional responses like fight-or-flight and shutdown to more textured interactions and then highly nuanced textured interactions with a very defined sense of “me” and a very defined sense of who others are, whether anger can be broken down into assertiveness, annoyance, and




mild irritation before you get into full anger or whether the toddler goes from 0-60 in two seconds and flies into a rage all the time depends on how much textured interactions there has been. If the baby, for example, shows a little annoyance and the daddy says, “Ooooooh, is my baby annoyed? What do you want?” and the baby looks over to the toy and begins pointing and the daddy says, “Is it this?” and the baby assertively looks even more annoyed like “Yeah, you better give it to me fast!” and daddy soothes the baby with a nice soothing response like, “Ooooooh, can you reach for it? Can we get it together? Can you come here?” and the baby moves and gets it and realizes that they can get it and that they aren’t helpless and daddy brings it a little bit closer to make it easier and they collaborate together to get that toy, we’ve taken what could have been a global responsive rage and made it into a textured interaction of assertiveness.

On the other hand, if daddy just ignored the baby and the baby just flew into a rage, or I should say toddler, we would be keeping just that global emotional reactivity cooking, not getting into these more textured degrees of annoyance and anger.

So as the “me” and the sense of self is becoming more defined; as the sense of “other” is becoming more defined through these more subtle interactions, we are also seeing the consciousness expand because now the sense of what is me is now a consciousness of a sense of self.


The question we are asking is how does this all lead to symbolic thinking which is yet a new level of conscious awareness because now we can have ideas or symbols that are being used by the growing child as well as just the experience of one’s own sensory and affective life and the sense of patterns that one is involved in the sense that patterns that defines the other. So how does the sense of self expand to become a symbolic self that can become a thinker and a more symbolic sense of consciousness – how does this miraculous process occur? Well, it goes back to our old friends, emotions and affects. When a baby, at the early times of life, is at the mercy of what we can call catastrophic physiological affects – fight-or-flight, shutdown – these global, overwhelming responses, then the baby’s sensory and motor reactions are pretty closely tied to one another – you get scared, you withdraw; you get angry, you attack; you get overwhelmed, you may shut down – they are fixed reaction patterns. There is not much separation between the perception; the experience of a sensation and a reaction to it, or an experience of a sensation and the double coded global, sort of physiological emotional response and then a response. We see this in adults too, in a person who is very emotionally overloaded and they may hit and say that their mind just went blank and just acted. The sensation of rage or the sensation of what the person said which produced this global, physiological affective reaction of rage just lead to a reaction. There was no separation, no thought, no delay. So we can call these fixed sensory motor patterns or apt to just call them fixed



perceptual motor patterns – you perceive something and you take it in through the senses and you just have a reaction.

Now as a baby becomes capable of more textured interactions, as we described if the caregiver makes this available and that is why the caregiving environment is so important and why it is so critical because children with sensory and motor differences to provide these nonetheless in these more textured ways with more practice, but as you get these more textured, back-and-forth interactions, remember the example I gave you about anger. Instead of going from 0-60 in just two seconds because you are angry and can't get the toy, daddy interacted with you in ten steps or in six steps from annoyance to mild assertiveness to stronger assertiveness to finally satisfaction in getting the toy through a collaboration with daddy. So now we have lots of back-and-forth, emotional interactions replacing these fixed sensory or perceptual motor patterns. As this happens, as you get 50 or 60 circles of communication between the baby and the caregiver from ages 4-5 months old up to about 18 months, you are getting more and more separation between what you perceive, what you take in through the senses and what you finally do. What makes this possible is more and more of these emotional back-and-forth negotiations whether it is happiness and joy and learning to be wooing of your parents and making yourself smile through flirtation or whether it is negotiating your annoyance and anger so you negotiate rather than go to war immediately, you are getting 50 or 60 circles of communication.

So now you have perceptions but they aren't tied to fixed reactions. There is all of this emotional interaction between what you take in – what you perceive – and what you finally do. The more subtle these are and the more of them there are the more separation we get. So eventually we have what we call free standing perceptions. What are they? Well, you see mother, but it isn't tied to grabbing her for food or yelling at her for frustrating you, it is tied to a thousand different things. You may want to play, you may want to flirt, you may want to show some annoyance at something, etc. And as this happens, you have now a free-standing image; a picture of mother. Now this free-standing picture is an image, or the beginnings of what we will call an idea or symbol. Over time, this image; this perception; this picture of mother, but it could be of an apple, it could be of a pear, or it could be of a toy, acquires more and more meaning through more and more interactions. So as you interact with mother in a thousand different ways, you are investing this picture with a thousand different emotions or emotional qualities. Now we have an image or an idea with lots of emotional qualities or lots of meaning. Obviously, this grows throughout the years. As a teenager and adult, it will have even more meanings because of the zillions of even more interactions than it did when we were two years old where it is still only a few in comparison. But whether it is mother,




father, or the apple – and the apple initially is something that tastes good but it is eventually something we throw at our sibling, it's something we give to the teacher to make her happy, it's something we think of as good for us or healthy, it's something we think of that looks like some other fruit that we may enjoy eating, so even something like the apple becomes invested with many, many different sensory and emotional experiences and acquires meaning.

So from mother to apple and everything in between, ideas now are free-standing perceptions that become ideas acquire emotional meaning. As they do and as we separate them more from their fixed patterns that are characteristic of the more catastrophic state of early infancy, they become more and more symbolic.

So a symbol in this sense, or symbolic thinking is defined as the ability to use these images or ideas in freer and freer ways. Then we see this play out in pretend play with the dollies being happy or sad or feeding the baby or putting the baby to sleep, we see it in the baby using words in highly textured ways: “Mommy, I love you” or “Daddy, I love you so, so much” or “Mommy, you make me so happy when you take me out to play” which will come a little later as we combine symbols together.

So once the baby can separate perception from action and have free-standing images and invest these with different emotional meanings, we get the beginning of symbols. As we are getting these symbols, be mindful of the fact that there are different degrees of breadth and range and stability to them. So some toddlers, where there is a big range of emotional interaction with caregivers, from assertiveness and annoyance to happiness and gleefulness and curiosity and exploration, they may cover the full gamut of emotions. But where caregivers aren't comfortable with certain emotions, where assertiveness or anger never gets negotiated or where happiness is only minimal or curiosity is discouraged, you may get only certain emotions that get elevated into this symbolic level. Others remain at this more global, catastrophic level. So it's not surprising with adults when you “hit their buttons” and they fly into a rage or get depressed and shut down, those buttons are related to areas which haven't gone under a lot of elaborations; where there is not a lot of these subtle, textured, emotional interactions.


So for some toddlers and growing children, emotional intensity is too hard for them to handle either because biologically they are so reactive or because their caregivers haven't been as gifted at handling the intense emotions so the caregiver backs off when the emotions get too intense and they don't continue the subtle interactions. So the capacity for symbolic thinking is not as stable. When emotions get intense, there is a shift back to this action level and these global patterns of action.



So both the stability and range of one's emotional life helps define how broad and how stable this capacity for symbolic thinking will be. Then symbolic thinking goes through a number of stages. The creative stage where the symbols are being created as we see in imaginative play and meaningful use of words, but also using pictures in the same way or using images that may be provided for children who are not very verbal. Then when children learn to combine symbols together like answering "why" questions and go through a stage of causal thinking. Then we get to the higher levels of symbolic thinking; what we call multi causal thinking and gray area and comparative thinking, and finally reflective thinking coming after ages 10, 11, or 12 where a child can say, "Gee, I'm not as happy today as I usually am, I wonder why? This is not myself" where they are comparing their feelings of the moment to an inner standard. Or, where they say, "Gee, I like Mark Twain better than Tolstoy because my background is more similar to Mark Twain's" as they are writing an essay – again where they can compare their experiences to some internal standard.

So we get higher levels of symbolic thinking as a child learns to be a causal thinker, but this again requires the parent to ask, "Why do you want to go outside?" or "Why do you feel sad?" or "Why do you feel happy?" so there is that challenge to connect the child's ideas to the parent's ideas. Multi-causal thinking which occurs a tiny bit later at age 4 or 5 after the 3 year old causal thinking stage for the 3 or 4 year old occurs as the caregiver says, "Well, can you give me other reasons for that?" Comparative and gray area thinking occurs as mommy or daddy say, "Well, why do you like Johnny better than Susie?" or "Why did you like this book better than that book?" As gray area thinking occurs – "Well, how much did you like this book better than that book?" and "Which reason was most important in your liking this book better than that book?" Finally the reflective thinking occurs only when the caregiver is saying, "Well gee, how does this compare to the way you usually feel?" or "Why did you pick Twain over Tolstoy? What about you makes you like that better?" So as the child is challenged to be a reflective thinker or multi-causal thinker or gray area or comparative thinker, the child can develop these abilities under favorable circumstances.

At each of these higher levels of what we call thinking, there is really a high level of organization to the sense of self and to conscious awareness so this is constantly being refined and developed. Once reflective capacities, and I shouldn't really be talking about reflective thinking, I should be talking about reflective capacities where we are talking about the sense of self and consciousness as well as symbolic thinking, and that is true for all the stages I have just mentioned, then as we expand our experiences through adolescence and adulthood, we go through additional stages where reflective capacities become expanded and expanded and expanded. We have described these in great detail




in our book, *The First Idea: How The Symbols, Language, and Intelligence Evolved from Our Primate Ancestors to Modern Humans* so I won't repeat that here, but you can see why it is so important to help a baby go from that first stage of just physiological arousal and sensory awareness of the world into the world of subtle, affective interactions with caregivers.

In order to develop a sense of consciousness, then a beginning, then a more advanced sense of self and then finally a symbolic sense of self, and then finally a capacity where symbolic thinking which can then occur and develop to higher and higher levels which keeps expanding our sense of consciousness and our sense of self. At every level we have been describing, you can have a broad range of emotional experiences that can be encompassed in your sense of self and your symbolic thinking, and your self awareness and your level of consciousness, or you can have a narrower range, and you can be very stable or intense emotions can lead to regressions.

So this is our picture of human development where consciousness, sense of self, and symbolic thinking can develop through multiple levels dependent on the experiences we make available to our babies, toddlers, preschoolers, adolescents, and adults. Nothing is more important than the experiences we make available and how we tailor these experiences to individuals whose nervous systems may have unique qualities to them, whether there are language problems or differences in the way they respond to their sensory world, but each and every individual can develop a fuller sense of their consciousness and their sense of self if we tailor the caregiver and human-to-human interactions to that nervous system. Some people's potential may be greater than others but everyone is potentially is greater than we think if we create this tailoring and we create these emotional and interactive experiences. We have to consider in providing environments for children, particularly for children with challenges and special needs whether we don't have an ethical obligation to provide the environments that are not just going to encourage compliance or encourage obedience, but help the child create who they are as a person and their awareness of themselves. When we talk about consciousness and we talk about conscious awareness, we are really talking about helping every child get to some degree of reflective self awareness.

These same nuanced and textured affective or emotional interactions that create the sense of self and create consciousness and create symbolic thinking also is what helps us unite all our different mental experiences. When we think of the simplest interactions between a baby and a caregiver of looking and listening and touching mommy's hand at the same time, the baby's pleasure in looking and listening to her voice and touching her hand is helping the baby bring together touch, sound, and sight, as well as under the direction of that wonderful affect of pleasure. When you are angry and you are lashing



out with your fists banging the table and giving an angry sound and angry look you are uniting the motor responses of the face and hand with that affect.

So think of this in terms of the different parts of the mind working together as a team, but also think of what is happening as the brain is developing its pathways and connections in early development. The strength of the affective interactions becomes the orchestra leader for helping the whole orchestra to play together at the level of the mind. Here is where the mind, as that works together, helps the brain begin working together. With the new evidence that many children with autism, their problems are in the interconnectivity between different parts of the central nervous system or the brain, not so much one part alone, we have to wonder whether our hypothesis about the origins of autistic spectrum disorders at the psychological level isn't what we had proposed – that is a difficulty with the early double coding with the experience of affect in relationship to initially sensation and eventually initiating motor responses and more complex motor planning. The reason it shows up more in the second year of life is because we expect much more from the toddler in terms of taking you by the hand and walking to the refrigerator and pointing out what they want and why the pointing, which has been characterized in children developing autism – lack of it, I should say – isn't really just the tip of the iceberg. The lack of affect or emotion directing this complex set of motor responses.

So here as we are developing the sense of self, as we are developing greater and greater levels of consciousness and developing symbolic thinking, we are also, simultaneously, in order to have an organized sense of self, this must happen. We are integrating or uniting or bringing together the whole mental team, and likely, although we don't have all the neuroscience evidence for this yet but we have preliminary evidence, bringing together how different parts of the brain work. So we are creating a mental team with good mental teamwork at all levels.

Thank you.