

## **Web-Based Radio Show**

### **Series on Learning Differences, Learning Challenges, and Learning Strengths:**

#### ***The Ability to Plan and Sequence Actions and Ideas***

**Stanley I. Greenspan, M.D.**


March 30, 2006

Good morning and welcome to our web-based radio show. This is Dr. Greenspan and thank you for joining us today.

As you are well aware, we have been talking about learning and learning challenges, learning strengths, and learning differences. This is part of a series. We have been using the image of a learning tree with the tree trunk having to do with fundamental thinking and social skills, and the branches having to do with academic skills, and the root system having to do with those ways we take in information and plan our actions – our processing abilities that support the whole learning tree. We spent a number of sessions going through the critical root of auditory processing and language, which is a foundation not only for our thinking, but also for our reading and almost all academic subjects.

Today we are going to focus on another critical root system, which is what we call our ability to sequence. This involves motor planning and sequencing, but it also involves the sequencing of ideas. So sequencing actions, sequencing ideas, and these ideas can be verbal ones, but also visual ones. So this whole ability to plan and sequence actions and ideas is a critical foundation. We often hear of children who have “organizational learning problems.” We often hear of children with executive functioning problems. This translates, very simply, to problems with sequencing; with organizing or ordering information or actions in terms of carrying out tasks. There may be many different reasons for such a problem, but it comes down to difficulty with sequencing.

There are many gifted professionals who are bumbling when it comes to organizing and sequencing. Or some people can organize ideas in mathematics, but not




organize their socks in their drawer. The absent-minded professor is always the butt of everyone's jokes. So being a good abstract thinker doesn't mean you are always a good sequencer. Or, as I will show in a few moments, abstract thinking can be used to help you sequence better if you use it properly. So we can take other strengths and help out our fundamental sequencing ability.

There is also another term: dyspraxia or apraxia, which is simply problems with sequencing interactions. Children who can't put together a series of motor acts in a row – to take purposeful action to problem solve – often are given the description of being dyspraxia or having various types of apraxia. Some children have trouble speaking when the contributors are oral/motor dyspraxia. In other words, difficulty with sequencing your sounds or making all the sounds. So motor planning and sequencing, and more broadly, sequencing generally, executive functioning, which builds on the sequencing ability, organizational capacities – this is what we are talking about in this root system that we will be addressing today.

Let's go back to the beginning in understanding this root system and understanding how to strengthen it. Let's go back to how it forms, because the best way to strengthen the root system is to strengthen it at its foundations, or at least understand where the weak parts are. If they are at the foundations, we have to know how this begins, and then we'll trace it up the developmental ladder and we'll see how, once we figure out where the weaknesses are, we can then practice and strengthen the different points in this developmental pathway to becoming a good planner and sequencer.


It begins, interestingly, probably before baby is born when the nervous system is enabling the fetus - the yet unborn baby, as the nervous system is growing and as the different parts of it are coming in, particularly this cerebella parts and the frontal lobes, is enabling the baby to go from more random movements to rhythmic and synchronous movements. So even in uterus, babies begin moving like they are Fred Astaire or Ginger Rogers in a dance. There is a rhythmicity to it; a timing to it. This is in advance over simply random movements. It shows the beginning central nervous system organization, and it is the beginning of it becoming purposeful because rhythmicity and timing is predictable and purposeful.

We also begin seeing babies before they are born responding to things from outside the womb. We'll see them responding to the sound of a voice or tap-tap on the



tummy, sometimes. This is not a conscious fetal response. This is, again, that nervous system reacting. But, often reacting in a rhythmical and timed way, and with some degree of synchrony, not just internally – synchrony with its own movements in terms of timing and rhythmicity, but synchrony with the outside world. So this is the beginning of organization and purpose. It is useful to think of the first level of organization and purpose as having to do with rhythmicity and timing of movement. Once the baby is born, we see this even more clearly, as the baby moves his arms and legs, even when we aren't reacting with him, and we see that there is a certain rhythmicity, timing, and synchrony to it. Once we start interacting with our babies, and they look at our wonderful faces and seem to look for our voice as we tell them how beautiful they are and make funny sounds at them, we see that this rhythmicity, timing, and synchrony takes place between the baby and the caregiver. Often they will be waving their hands – not one after the other, but together, so the baby enters a rhythm with the parent and we see nice synchronous movements. In fact, for babies who have some delay in the development of their nervous system because of oxygen loss at birth or because of some other biological challenge, often we will see a delay in forming this synchrony with the outside world or there will be a little more movement that is nonpurposeful that seems more random. We're working and doing some research on that currently to see if that can be an early clue as to babies who might be having challenges before the challenges become obvious, and so that would then provide a window for us to begin helping those babies even earlier than we do now.

The next step we see in the development of planning and sequencing, is where the baby begins adding onto these synchronous movements – not replacing them, the synchrony and the timing and rhythmicity always stays as the foundation, but begins adding onto these, purposeful actions, such as turning to look at mommy's face. So in the early months of life, we'll see, and sometimes the early weeks or days – we'll see the baby turn left or turn right to find mommy's face and her wonderful voice and that big smile. The baby often can't even digest or comprehend the whole face yet, but may respond to the sound and the moving lips. We'll see babies discriminate or respond differently to mommy versus daddy or a voice they like versus a voice they don't like. This is the beginning of purposeful action. What is interesting about purposeful action, is it is the beginning of planning and sequencing. What is important about it, is that it is guided not just by the perception of mommy's voice or seeing her face, but it is guided by the emotional reaction the face and voice, or the other object (red ball mother is holding) invokes in the baby. So it's not just a sensory motor action, where the baby




senses the voice and looks and turns, which is the motor action towards the voice. But, it is what we call an “SAM” – a sensory affect or emotion motor response. This is where the baby senses the voice or sees the face, or both, and then experiencing something like a pleasure, although we don’t know how the baby experiences that, but he may have a smile on his face, and then turns towards what the baby finds comforting, soothing, or pleasurable. So the affect; the emotion, in a sense, mediates or determines the planned action. If, for example, we have a caregiver with a voice the baby finds aversive or unpleasant, we won’t get the looking. We may even get the looking away or a random movement or a startle response. So we can get a reflexive reaction, but we won’t get a nice, purposeful, smooth looking reaction. So, we can already tell that babies can already discriminate things they like and things they don’t like, and it’s the emotion that determines whether we get a planned action or not.

Now we have a perception or a sensation registering in the brain, we get an emotional response, and then the baby is guided by that emotional response. The emotion, in a sense, orchestrates a purposeful action. It allows the baby to get more of it. So, that’s the beginning of planning and sequencing. I’m emphasizing and underlining the importance of emotion or affect because I’m going to keep coming back to that. That is going to be the key to our strengthening the planning abilities.


Now for kids who can’t plan effectively well, we have to increase their affect because they are having trouble and it doesn’t come easy to them, so we have to increase that mediating step between seeing something and doing something for the kids who have trouble doing. So to jump ahead, a child who has trouble remembering to do his homework, if that same child will remember easily that Daddy promised to take him out for ice cream. The difference is not that the child is being manipulative and just doesn’t like his homework (which is true), the difference is that the affect – the emotion and the pleasure - is much stronger for the ice cream. So it helps the baby remember. All of us do the same thing – if it’s something we are really looking forward to, we rarely forget it. But something that we are dreading is easy to forget to do. So the emotion is very, very important. And, for kids at school, we often try, for example, to increase that pleasurable affect, to give them more purpose.

The third step then becomes a very, very important one. The newborn baby begins using actions not just purposefully by looking to mommy’s face, but in a many circled purposeful way. By many circled, I mean in a back-and-forth purposeful way. The baby, by 4-9 months, is beginning now to not just take pleasure in mommy and




daddy and use that to organize their attention and their engagement, but now can get involved in what we call many circles of communication, or reciprocal interactions. So they can look at mommy's face, mommy holds a nice bright blue rattle in front of her face, she'll reach for it, take it, examine it, open up her hand and hand it back to her, she can hide it in her hand and she'll look for where it went, and by 9-10 months, even press on her hand as though to open it up and find it. So now we get many back-and-forth interactions. The baby's actions now are not only purposeful once, but purposeful 3, 4, or 5 times in a row. They are contingent or related to the mother's actions. So now we are getting more complex purposeful action and the planning is not just simply a one-step plan, but now it's a back-and-forth interaction involving 5 or 6 steps. So we go from rhythmic and timed movement, to purposeful movement, to back-and-forth purposeful movement. Now, why am I emphasizing this step? Many of the children with the more severe types of dyspraxia, or what we call motor planning problems, who aren't purposeful or focused at all, we'll notice that when we try to talk to them or play a game with them, it's hard to keep them interactive. They keep tuning out. We may label them "inattentive" or "ADD" or "ADHD," but whatever label we give to it, it doesn't change the fact they haven't mastered these critical steps in development. For some of the kids, medication may help a little bit, for others it doesn't. The best solution, we have found, is strengthening this foundation piece that may be missing. I would say, in my experience, at least 50% of the children are not very good at opening and closing what we call "continuous flow of circles of communication" are not very contingent. They are always, kind of, tuning out. When we strengthen that piece, we strengthen that whole planning and sequencing and problem solving ability. So it's very important to see whether they have gotten to that third step of back-and-forth contingent interactions involving many back-and-forth's in a row. It can go on indefinitely, as long as the other person participates in it.

Then we get to a fourth step in motor planning and sequencing, where we build on the third, we get the back-and-forth interaction, but now each back-and-forth interaction may have many steps in it. So here, in ordinary development, by the time a little baby is a toddler who is 16, 17, 18 months old, they can take mommy by the hand, walk her into the toy area, point to the toy they want, get her to nod, motion for her to pick them up, she'll pick them up, they may grab the toy off the shelf, give a big smile, mom says, "Are you happy?" and they may nod their head with a big smile back and get put down and then play with the toy with mommy together. Now we have not only many back-and-forth's in a row – many circles of communication; many purposeful




interactions in a back-and-forth way, but each action may have three steps to it where the baby vocalizes, points, and reaches, and then mom responds with a gesture. Then the baby takes the toy, smiles, shows it to mom, and mom nods her head. So, the baby is doing three actions for every one the mom is doing, but they are all contingently tied to mom.

Why is this step important? Well, this enables the child to increase the number of steps in a row the child is using in their sequence, initially with actions, not yet with words or ideas. Later we'll enable the child to use many words in a row together. Eventually to write an essay, having many paragraphs in a row. What other feature of this is very important? The other feature is that the actions are all logically connected. The baby reaches for the toy, smiles, shows it to mom – those are not random or free-associative actions. They are logical in the sense that they have an orderly sequence and a larger purpose to them to get the toy and share it with mom. Here too, all complex planned actions or important sequences, whether it's writing an essay or solving an obstacle course or figuring out your taxes, involves many steps in an orderly and logical sequence. This is where a lot of us have troubles and difficulty. So the fourth step is seeing how many actions in a row we can get as part of two-way communication; as part of this back-and-forth. So we want both the back-and-forth, we want each back-and-forth action to be made up of many little actions and make it as complex as possible. And we see typically in development, from 12 to 24 months, as language has begun to come in, these complex, what I call "shared social problem actions" are getting more complicated. Toddlers will have 5 or 6 steps for actions. They can do the equivalent of solving an obstacle course. They are getting their needs met through many gestures and actions in a row. As words come in, they are combining gestures such as pointing, showing, smiling, vocalizing with different tones of voice – together with use of single words. One of the mistakes we have made in the history of child development, is to not give enough emphasis to this step of what I call, "shared social problem solving." That's the fourth level of our developmental levels we have identified. We have tended to jump from simple actions right to language. So parents are waiting for babies to sit up and crawl and walk – simple actions, and then the next thing they are looking for are the first words, missing this foundation piece for planning, sequencing, and problem solving, which is getting into a continuous flow of back-and-forth interactions and using it to solve problems together with another person.



The other element of this I want to highlight is that there is always another person involved. So, there is a difference between a child who takes mommy by the hand, finds the toy, and does the thing I mentioned before, and the child who just plays a pop-up toy game on his own, pressing buttons and getting the toys to pop up. The child who does it on his own, we'll see him lapse into more repetitive play after a short period of time. He seems to do the same thing over and over, particularly at this stage of the toddler level. The adult doing a crossword puzzle will be doing different crossword puzzles, even though they are doing the same thing in one sense, they are doing different things in another sense.


It's the shared social nature of this that makes the planned action truly meaningful because when you are negotiating with another person, and you're interacting off the other person's cues, it's a much more complex mental process because you are perceiving what they are doing, you are taking it in, you are having an affective, emotional response to it, and then you're planning your next actions. Each one fuels the other. The emotion, you derive from seeing what the other person is doing in response to you, it fuels your next steps in the action plan and makes it more complicated. You're constantly adjusting your actions to theirs. So, in a sense, unless the other person is terribly repetitive, if they are giving you truly novel responses – they are responding spontaneously to you, which I hope they are, you are constantly being called on to create a novel response pattern back. So you are planning new actions all the time. Really, the heart of our ability to plan and sequence is to plan and sequence new actions, not just tie our shoes over and over again, or pick our nose over and over again, or do a crossword puzzle over and over again. That's a more, fixed, rigid, or limited type of planning and sequencing. So, true planning and sequencing is the ability to take initiative, create an action plan, for instance our behaviors related to our thoughts, to solve novel problems. That is fueled by this ability to respond just in basic back-and-forth social interaction, in what we call "shared social problem solving." Then a thousand or a million times a day, you are creating novel responses to the caregiver's responses to you. So true planning and sequencing is never done in isolation, it is always a response to another person or thing. Sometimes it might even be an inanimate object to challenge, like you are trying to build something, as an older child or an adult, and you are confronted constantly with a new challenge of, "How do I get the nail in here, how do I make this building bigger, how do I make this car move with the way the wheels are falling off..." So the physical world can present constantly ongoing challenges too, but it starts with the shared social interaction because you get much



more variety and novelty from another person than you do even from a car that is tough to move and it won't provide quite as much novelty.

Another reason why this stage is so important later on, when we are working with sequencing ideas, we're often sequencing our ideas effectively because we have an internal expectation through the world of ideas, of using those ideas in some meaningful context. We are writing the great novel for a reason. That reason has a history in our social interactions and our social relationships. If we want to write the great novel, but we are also writing it so that people will read it and appreciate some aspect of human life or human endeavor or some experiences that we have had. So, in our minds, we are communicating with some "other." The "other" could be the world, it could be our parents, it could be friends, it could be someone amorphous, but there is some "other" we are communicating with. When we are building the great invention, we are building it to improve the lives of some "other." So there is always a relationship found there, somewhere, that is related to our ability to create this novel plan, whether it's the invention or the novel or the great speech or the great essay. This begins before shared social problem solving, but takes its form and shape from the shared social problem's interactions. So that creates the inner expectation that guides us. If, when we are doing the great novel, we have a game plan in mind because, again, we are trying to convey some special experience in relationship to sharing it with somebody or the world. So again, there are these relationships down there, guiding our actions. And there are our emotions or affects mediating these now internal relationships guiding our actions. The child who is deliberately and purposefully negative, for example, who looks like he has a planning and sequencing problem but really doesn't, he's just angry and negative, is also using these relationships, but in the opposite direction. But that is a kind of pseudo-dyspraxia. What we see is an angry and negative child who is very organized and we know how organized because they defeat us at every turn, then we know that's not random. It doesn't always have to take a positive direction.

That is why this stage is so important. And again here, many kids who are 8-9 years old who get labeled with attentional problems or dyspraxia, have difficulties with getting into not just back-and-forth interaction in a continuing way, where they tune out all the time, but in these more simple shared social problem interactions – taking you places, showing you something, solving simple problems with another person with each one only involving 3-4 steps but in a contingent response to someone else. Again here, that affect and emotion is the mediator. By strengthening it, we can improve that




capacity as well as practice. The reason I'm emphasizing all these steps is we have to go back and practice the steps that are weak. As far as emphasizing here, there are some simple principles that we'll come back to today and in subsequent discussions. Those simple steps are: Identify which foundation pieces are missing by following this developmental pathway I'm providing here and practice those missing steps. But, practice them with states of high affect or emotion with more pleasure. So we increase the affect and playful emotion, and we practice. We practice it in an interesting and pleasurable way, but we practice at the foundation levels, not just at the end result we want.

Now we're going to take a break now for just one minute, because we are midway through our show, then we're going to talk about higher levels of sequencing and ideas, but let's just take a one minute break and I'll be right back with you.

Ok, we're back. Thank you for being patient.

We've been talking about the steps leading to motor planning and sequencing and how we strengthen those abilities. As we've been saying, we're now at the stage where actions are becoming more complicated in the child who is piecing together three or four steps between their interactions with others, they take more complex actions, and basically at this stage, or for this foundation piece as the child gets older, remember we are strengthening all these foundation pieces all the time, even with a 5 year old, or 8 year old, or 10 year old, even though they come in for the first time when a child is a toddler, we're going to try to get these actions more and more complicated. See how many steps the child can master in a row. So to strengthen this foundation piece, we want to bring in a number of related abilities of the mind and brain that makes it easier to take complicated actions as part of two-way shared social problem solving. One is just to increase the complexity of the action, so having games with obstacle courses, for example, is a very good way of a child having to take, instead of two actions, three or four actions in a row, or five or six actions in a row, creating obstacle courses that are not even obvious obstacle courses like playing dumb and the child has to bring a chair over for you to stand on to help him get the toy. That's another way of making the problem solving more complicated. You can give him options, saying, "Can we get the ladder or the chair or some box? I can't reach." And you can gesture that you can't reach for the object. So having the child work a little harder to create meaningful action when the child is highly motivated adds to the number of steps you have to take to




solve the problem. As you add to the number of steps, the child is becoming a more complex sequencer and planner, all in the state of high motivation.

Now you will notice something else happening at this time, though, as we get into more complex actions. It becomes more important for the child to integrate, or bring together, the left and right sides of his body. In normal development, again during this same stage or during the toddler stage, we look for the child using both sides of his body in a more organized way. We actually look for it in the latter half of the first year, but certainly prominently in the second year of life. So here, involving a child in things like throwing and catching the ball, we have to use both hands. Or pulling something where he has to coordinate both hands, or a game where he has to crawl and use both sides of his body to get through a circular object on his way over something. Or, he has to switch from left to right, or copycat games where you have to use your left and right hands in rapid succession together, touching your right hand to your left knee and your left hand to your right knee and your left hand to your right ear, etc. All those are fun things that increase left/right coordination. There are a lot of activities on the Internet under Braingym having to do with left/right integration and coordination.

So strengthening that ability to use the left and right sides of the body, and many children with dyspraxia or motor planning or sequencing problems or problems later on with sequencing ideas, have problems with left/right integration. At around 9-12 months of age, actually, we are seeing the left and right sides of the brain communicate more with each other. As the prefrontal cortex is developing around that same time, it helps coordinate the left and right sides of the brain. Now typically, the right side is described as more spatial and the left side is more verbal – the left side having to do with more concrete sequencing and the right side having to do with more rhythmicity, timing, music, and spatial relations. But to get real high levels of planning and sequencing, we need both sides of the brain working together optimally. So we want to foster that, particularly as we are getting into more complex actions.


Now there is another component we want to foster too. That is the ability for balance and coordination. Again, as we get into more complex actions, the more coordination we have and the better balance we have, the more that helps getting all the different parts of the nervous system working together. So while many parts of the central nervous system or brain help with coordination and help with balance, the cerebellum is a particularly important part of the central nervous system or brain that helps with that. Games or activities that help develop the cerebellum are very



important, therefore. So I'll give an example – try standing on one leg, and you'll find it pretty easy as an adult or an older child listening or reading about this. But now, close your eyes and stand on the same leg and see how many seconds you can last with your eyes closed. You'll find it's much harder. Some of you will last three or four seconds, some 10, some 20, some even half a minute. Only a few of you will last a minute or more before you tinker over and have to rebalance yourself. The reason is, your vision actually is helping you balance, but you don't usually think about that. When you close your eyes, you are depending on just feedback coming in not from vision but just from your skin and what we call your proprioception – from your feel of the floor, and the feedback you are getting in your body from the sensations of your feet against the floor. Many parts of the brain are helping with that. So walking across a balance beam and balancing yourself is a good activity. Standing on one leg on the balance beam with your eyes open is a good activity, but then standing on one leg on the balance beam with your eyes closed becomes a real feat. A lot of kids have, and a lot of adults have these little foam or air-filled rubbery things you stand on, but they are hard to balance on or things that have a little piece of wood in the middle and have another piece of wood creating a little platform on the little piece of wood and you have to balance yourself. It's a little bit like skateboarding or skiing. That is fun to see how long you can balance on that. Again, doing it with your eyes open and your eyes closed. So the eyes closed test shows you how good your balance really is.

Gains that involve coordination – throwing, catching, kicking, moving left, moving right like agility exercises and balance and coordination exercises - balance beams, tight ropes, walking backwards, hopping or skipping on one leg with your eyes open and your eyes closed, balancing right foot/left foot on your toes, on your heels, eyes closed, balance beam with your eyes closed – these are all great games for improving that balance and coordination. Particularly the balance part of it, but the coordination is important too.


Activities that ordinarily lead us to be excellent dancers or excellent athletes are all great and all involve high levels of balance and coordination, and also left/right integration. Basically, we can do all three things together – left, right, balance and coordination together by doing activities ordinarily associated with sports and dancing and creating our own novel obstacle courses. Trampoline work is great here too, but you have to be careful and make sure it's safe when children are involved and use trampolines that are low and have lots of foam padding next to them. This is safer than



a real trampoline which is high off the ground and could be associated with more risks for injury. Obviously, bicycle riding and things like that involve coordination and balance. Later on in life, skiing and sports, as well as all kinds of eye-hand sports like baseball, football, basketball; all kinds of dance, especially ballet is obviously great for all of this. The key is to keep making it more complex. There are many, many, many exercises or activities or fun games that are on the Internet that one could Google – if you just put in the word “balance” or “coordination” or “left right integration” and you’ll get lots of ideas. But, there’s nothing like your own novel ideas and creating your own games.

The point that I want to come back to is that this enables more complex actions, which enables more complex sequences. Think of it this way: When we do the balancing and coordination and left/right integration, we are getting those components of complex actions so routine that you don’t have to think about them when you are planning a complex action. So when you are playing tennis, you don’t want to have to be thinking of “I’m holding the racket with this hand in this way and moving my legs three steps to the left, four steps to the right, trying to balance on my right leg while I move my left leg forward...” because then we can’t focus on the ball. So we want all of those things to be automatic – integrating the left and right sides of our body, the balance and coordination parts, so we can focus on hitting the ball and if we are a really good player, we don’t even want to have to think about hitting the ball - that should be automatic too. The ball comes and we hit it, we are thinking ahead three steps – I’m going to get him moving left, then right, then left, then right, then slice the ball just over the net right when he’s used to a left/right pattern he won’t expect the throb shot. So you are planning just like a good chess player – 4 steps ahead in a planned action sequence. Your mind is on the sequence, not on hitting each shot because all that is automatic because you have all these elements so well in place so it happens almost under automatic pilot.


Similarly here, your ability to plan complex actions or eventually ideas, hinges on how well these components of balance, coordination, and left/right integration, as well as multi-step action patterns are already in place. Also, practicing these things has another advantage. As we do, particularly the balance and coordination exercises, it’s also, as with all exercises, we build muscle. Now we are building literally, although we haven’t proved this yet in humans, but animal studies suggest that if you practice something, you are increasing the neuronal connections between the areas of the brain



that are used when you practice that activity. If the same thing happens in humans, which is highly likely from preliminary studies, such as brain imaging studies of musicians show more developed pathways in areas of the brain so you are contributing to the finger movements used in that musical instrument, then you are actually strengthening your central nervous system, or the neuronal connections of pathways in the brain. We want to strengthen the connections between all the different parts of the central nervous system because they are all involved together in planned actions – our cerebellum, our frontal lobes, our cortical lobes once you use a lot of planned ideas and interactions and our emotions because they again, are the reasons why we take action and they are the mediators of the action - so our limbic system and our paralimbic system and all those other areas that are related to emotions. So we have all our areas of the brain working together as we carry these steps out.

Once we strengthen these abilities, and these are the foundation pieces, we often have a child who is stronger on his capacities to take planned action. So remember the things we are trying to strengthen. We are trying to strengthen rhythmicity and timing, because some kids are weak at this first foundation piece, but try to strengthen #2, the emotions associated with relationships that mediate action. So we are invested in interacting with others, which is the foundation for purposeful action. So a very self absorbed person is not a person who is great at taking purposeful actions. Occasionally they have developed action plans with the inanimate world, but that is rare. Then we want to make sure we strengthen back-and-forth interactions – contingent or reciprocal. So many of the kids are just tuning out too much. Then we want to have our shared social problem solving where we get many interactions in a row – each one made up of greater and greater complexity. Can we strengthen the use of the left side and the right side of the body together? Can we strengthen balance and coordination at the same time – throwing, catching, kicking games; standing one leg with our eyes closed, balancing on our balance beam. All of those things are going to contribute to our ability to strengthen our planned action, even before we get into the whole world of ideas. So this becomes very important building blocks for improving our ability for planned action, for praxis.


What needs to be clear is that many children who get diagnosed with ADHD or executive functioning problems, organizational problems – have problems at this basic level of planned actions, or praxis. I would say of the kids who come to see me for ADD type problems and for a secondary opinion about a diagnosis, while they may meet the



criteria in the DSM system for ADD or ADHD, they also meet the criteria for having problems with motor planning and sequencing or praxis. In other words, dyspraxic. Here, we always often have a choice. Do we work on building and strengthening these foundations and holding off on medication until we see what kind of progress we can make? Interestingly, when medication is helpful – it's not helpful for all kids – it often helps with prefrontal lobe functioning, i.e., strengthening motor planning and sequencing. But since it has side effects too, we want to see how much we can do without the medication because that either means we don't have to use medication with some of the kids. If we feel it would be helpful to use medication, we may get by on a much lower dose or for a shorter period of time, all of which is helpful. We never want to just do medication alone.

Remember the principles: We want to practice foundation pieces that are missing, and we want to increase the affect – the emotion because that is the mediator in getting to more complex actions and interactions. The next step in our sequence is where we begin using ideas – first to guide our motor actions. We have an image or picture in our mind of what we want to accomplish – that doesn't occur in our toddler. He may see the book up there and he may have an action plan, but he doesn't really picture the action plan. He doesn't picture having the book in his hand or getting the book. But, by age 2-4, he is developing mental pictures. He can verbalize to himself, "I want the book" or actually create an image just like it was a TV image of reaching up and getting the book. That can begin guiding his actions.

Then we get into the world of sequencing ideas as well as sequencing actions. What I want to do is really start with that next time because that will require a long discussion rather than having it be disjointed and take a minute or two now on it, I think it would be best to start with "The World of Ideas" and how that relates to the world of planning and sequencing our actions and our ideas. Next week we will get into the world of writing essays, the world of carrying out and following instructions, and overcoming the executive functioning and organizational problems so characteristic of many youngsters. In that we will discuss a little bit about why some of the fascination with TV, games, or computer games may be counterproductive when it comes to helping kids really plan and sequence their actions and become good organizers. It may create an artificial sense of being able to do it in one domain but may create a kind of rigidity and limitation in the overall ability for novel problem solving.



Remember, the key is true problem solving – true planning and sequencing is planning and sequencing that is under the child’s initiative that can be done in novel and new situations and that is not just simply carrying out repetitive actions in the same way.

I will resume next week with part two of Motor Planning and Sequencing and Sequencing Ideas as the second component of our root system we are addressing. Thank you for joining us today.