

## **Web-Based Radio Show**

### **Learning to Master Higher Levels of Reflective and Abstract Thinking**


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Good morning. This is Dr. Greenspan bringing you our web-based radio show and I want to thank you for joining us this morning. Today's topic is one that many of you have been writing about and asking for more of a focus on and finally we're here. So I'm pleased we can focus on how we can help children advance from the basic levels of thinking into the more advanced levels of reflective thinking and abstract thinking. This includes the ability to make inferences, which is to come up with new ideas; the ability to be more and more creative; the ability for empathy – understanding other people's feelings; the ability for theory of mind – to take other people's perspectives and understand those perspectives and understand the world, not just from one's own point of view, but also from other people's points of view.

This involves a whole category of thinking that I think can be summarized under the term “reflective thinking” or more abstract thinking, which includes, as I said, inferential thinking, a high level of empathy including theory of mind and so forth. Historically, these higher levels of thinking have been thought to be beyond the reach of many children, especially children with autistic spectrum disorders, almost as though the hypothesis has been that there's a biological deficit that keeps the child from reaching these advanced levels of thinking, particularly high levels of empathy and theory of mind, including reading social and emotional signals. In fact, supporting this hypothesis which, as you can tell from my tone of voice, I believe is incorrect, are imaging studies showing that when you have children with autistic spectrum disorders, including Asperger's Syndrome, that look at images conveying emotional expressivity such as visual images, they don't process that information in the same part of the brain that children without spectrum disorders or Asperger's Syndrome do. I'll explain in a moment why that research may not be that correct or accurate and why the whole hypothesis is most likely not correct.


The core of today's session will focus on how we actually promote these high-levels of thinking, how we facilitate it in children with spectrum type problems, as well



as for all children, because even children without language problems or autistic spectrum type challenges, not all children reach these high levels of reflective thinking. Not all adults are reflective thinkers. We have lots of adults, as we know, who tend to think in an “all or nothing” way, a highly polarized way, a “my way or the highway” kind of thinking. So reaching high levels of thinking is not an easy matter and it’s something that children must learn. It’s not something that can be biologically turned on by just a switch, as though we have a genetic module and then we just sort of turn it on with some global environmental event, like exposing a child to language. Rather, as I’ll discuss momentarily, it’s a learned capacity that requires many special types of emotionally-based learning interactions and that, if these are in place, children without challenges can learn these high levels of thinking and children with challenges - we find that not all, but many, can learn these high levels of thinking, but we have to work a little harder at it. We have to sometimes use the side roads rather than the main highways. So, often we have to provide more of these kinds of essential, interactive experiences that promote these high levels of thinking.

But first let me share with you why some of the hypotheses that children can’t do this is incorrect. I think the most compelling evidence we have of why that hypothesis that children with spectrum disorders cannot achieve these high levels of thinking is the following: We did a chart review of 200 cases and we found that a significant proportion of the children that we worked with in that chart review had, in fact, achieved these high levels of thinking. We’ve just done a follow-up study of the children who made the most progress of these 200 children. We took the 20 who had made the most progress and - with these children now in their teenage years and are getting ready for college and some are just starting college - we’ve now further documented that they’ve all achieved not only high levels of abstract, reflective thinking and high levels of empathy and high levels of theory of mind, but many of them are more empathetic and more understanding of the emotional and social lives of other people, as well as their own, and are more creative than their same-age peers.

In other words, they not only compare favorably to their same-age peers, but many of them are a little stronger, particularly in the capacities that require reading emotional signals and understanding the emotions in themselves and others. This is especially surprising since this is exactly where the “deficit” is supposed to be! They’re not only good academically, and some of them are A students and academic superstars, not all – some are just average students – but they’re all in regular schools, all have nice friendships, all have a warm, good sense of humor, and so forth. But what was surprising was how many had gone beyond their peers in their emotional and social skills, and we attribute that to the fact there’s so much extra work that was done with these children. In




other words, in order to help the children get to this point, their families had to do extraordinary amounts of interactive, emotionally-based learning.

So there was a lot of warmth and a lot of security and a lot of empathy and a lot of understanding and a lot of emotional interaction in the families - more, probably, than is true of typical families. All these children took a long time to learn these skills. It didn't happen overnight. It didn't happen as easily as with their siblings who didn't have any biological challenges. So it showed us that children with biologically-based challenges who originally deserved an autistic spectrum or Asperger's diagnosis could master these advanced levels of thinking, albeit more slowly, albeit it with extra work, but could nonetheless get there and become even stronger in these skills than some of their same-age peers.

Again, I want to emphasize, this is the sub-group. Of the group that came to see us, of the 200 cases, this was a substantial subgroup. There was actually a little more than the majority of children, but this is probably not an accurate reflection of the general population because it was a self-selected group who came to see us and we don't know what percentage of the general population of children with autistic spectrum disorders would have this capacity to reach these high levels. But I would suspect that since I see a broad range of children and, while they're self-selected by their parents' motivation and willing to come in for an evaluation, it covers the range from the most severe to the least severe types of challenges. So I would suspect that in the population, in general, it's a significant subgroup with a significant percentage of children with ASD patterns. Only a larger study representing the population will give us a picture of how many children are capable of these advanced levels. But even the children who didn't reach these highly advanced levels did become more skillful at reading emotional signals and being creative in their thinking and doing some reflective thinking than we would have expected earlier or than would be expected by working with children in more rote-memory ways rather than teaching them and challenging them to learn thinking skills. So that's the one piece of evidence.

The other piece of evidence comes from some of the weaknesses in some of the studies that have supported the hypothesis that this is a fixed biological difference in the brains of children with Asperger's or autistic spectrum disorders. Morton Gernsbacher and her colleagues of the University of Wisconsin repeated the experiment where children were given pictures of visual images to look at that would elicit their processing emotions and she found that the original hypothesis that these children process emotions differently (in terms of the way their brains worked) than children without spectrum diagnoses or Asperger's Syndrome - she came to a very different conclusion. What she did was she suspected that maybe the children with the Asperger's and spectrum




diagnoses weren't looking at the pictures because they were too emotionally expressive and, therefore, they were processing them differently, not because they couldn't process them in the same way that everyone else did, but because they simply weren't looking at them.

So, she studied their gaze and found out in fact that were not looking at the pictures. They were particularly not looking at the mouths and eyes, which are the most emotionally expressive parts, which we know that some children have trouble looking at in real life situations, as well as with pictures. What she did then was she encouraged them to actually look at the mouth and the eyes and, lo' and behold, when she encouraged them to do that, they began processing the emotional signals in the same parts of the brain that the children without challenges, as the typically-developing children were processing it, so their brain imaging patterns were now not different from the control group of kids without challenges. But she suspected was that it was hard for them to do it and that's why they weren't doing it normally.

So then she also did studies of their stress with electric physiologic measurements and found that, in fact, when they did look at the face, particularly the mouth and the eyes, they were under more physiologic stress. It was harder for them. You know, how just like an anxious person, let's say, who's phobic about going over a bridge toughs it out and goes over the bridge, their heart starts beating faster and their skin response will show a different responsivity because they are under stress. They are facing something that is hard and they are doing it, but it's not easy for them. She found a similar pattern to these children or young adults who were looking at the expressive human face.

So this led to two conclusions from this study, which is actually ongoing right now and those who want information about it can contact Morton Gernsbacher at the University of Wisconsin, Madison. There are two conclusions: One, the fundamental differences in the brain that was hypothesized was not borne out. This hypothesis was not borne out and the reason why the brain patterns look different was because the behavior of the children was different. One (group) was avoiding looking at the eyes and the mouth; the other (group) was looking at the eyes and mouth. So, it's kind of like if you're saying that children with Asperger's or autistic spectrum disorders process information the same way they process information about toys or physical objects. You have to say, "Well, what are they looking at? Are they looking at emotional signaling or are they looking at a physical object?" Well, it turns out that these individuals were actually looking at something like the shirt or some physical object on the person, not, actually, the emotional expressivity of the person. And that's why they were processing in that part of the brain, as would be expected.




But it was stressful for them, which fits into the notion that children with autistic spectrum disorders do have differences in their sensory reactivity. Some are over reactive to sensations such as sights and sounds and are, therefore, very over reactive to emotional cues and signals. Others are under reactive, actually, and they wouldn't show a stress response; they might show a lack of responsivity and they might just not notice the emotional signals unless it's very highly active or high intensity. But I think she found a pattern mostly of over reactivity in her physiologic studies.

So, this shows how complex and how subtle some of the research is, and how very, very good research can lead to a misleading conclusion if you don't raise all the alternative hypotheses. One of the problems is when we're doing research and trying to conform a theory, often we don't do what good research is supposed to do. But it's hard to do. It means doing many experiments, not just one experiment. It means that you can't draw a conclusion until you disprove all the alternative hypotheses. So, every time you want to search for a particular truth and you have a hypothesis, it's not enough to have some confirmatory evidence of that hypothesis such as showing the differences in brain physiology patterns between an autistic spectrum (group) and a normal group. You have to disprove all the alternative hypotheses.

The history of mental health studies is full of this problem. Early on, years ago – probably 50 years ago – there were studies done on schizophrenia and it was thought that a particular biochemical had been discovered that was special for schizophrenia and may be a clue as to the causes of schizophrenia until a very, very astute observer began raising alternative hypotheses and tried to disprove those alternative hypotheses. This researcher noticed that individuals with schizophrenia were drinking a lot of coffee and they were drinking ten times more coffee than the average person! Then it turned out that this chemical in the blood was related to their extra coffee drinking, not a basic difference in their brain biology. So, not until the research controlled for diet were we able to find that out. Okay, but that was, again, looking to disprove alternative hypotheses, rather than just looking for just one source of confirmatory evidence for a hypothesis. So, it's tricky business and you've got to be careful about leaping to conclusions.

But, again, the most solid evidence I think comes from the fact that children with spectrum diagnoses actually can learn these capacities. It's easy to say, well, maybe they were never deserving of an autistic spectrum diagnosis in the first place if they learned these capacities, but that becomes circular reasoning. That's where you want to prove a hypothesis so badly that any you remove any information that discounts the hypothesis - you find some excuse for why that's not relevant. So in children who originally meet the criteria of the DSM IV-R for autistic spectrum disorders, they appear to be able to reach high levels of abstract and reflective thinking.



So, then question then becomes, “What are the steps and stages that help children master these high levels of thinking? What kinds of experiences do children need to master?” Over the last few weeks we’ve talked about how children learn to attend, engage, be purposeful, be preverbal communicators; how they learn to sequence and problem solve, and particularly to master shared social problem solving; how they learn to use ideas creatively, like in pretend play or just everyday language; and how they use to use ideas logically – connect their idea to your idea. So when they say, “I want to go outside,” and you say, “why,” they say “Because I want to play.” Or you say, “Gee, you’re looking sad. Why so sad?” They say, “Oh, because my friend won’t play with me.”

We covered the basics of how children master their first six stages of functional emotional developmental capacities, from attending all the way up to creative and logical thinking. But logical thinking does not mean that a child is an abstract thinker or can make inferences. So we’ve identified three additional stages on the road to truly abstract, reflective thinking that build on the child’s ability for mastering the first six milestones, and especially since milestones five and six have to do with creative thinking and basic logical thinking. Now I’m going to cover these stages and share with you how we help children with developmental challenges, including autistic spectrum challenges, master these advanced three stages.

The first of these three stages is to master the capacity for multi-causal thinking and triangular thinking. As I mentioned last week, we help children just become logical by making sure they connect each and every one of their ideas to our ideas. So when we ask a child, “Well, where’s your train going?” or “Where do you want to go for dinner?” if they ignore us and say “The blue ball” or “The red tree outside,” we say “I don’t get it” and play dumb. “What does the red tree have to do with where we’re going to have dinner?”

Then the child might surprise us and say, “Oh, we’re going to go the Red Tree Restaurant. There’s a red tree in front of the restaurant I want to go to.” Okay, now the child is making sense, but before he was talking in a kind of short hand. So we’ve got challenge him to close that circle. Sometimes we have to give multiple-choice help to help him close that circle because he has to connect his idea to our idea in order to be logical. A lot of children are pretty good expressing the logical when they talk but they don’t respond to what we say and true logic – true basic logical thinking – means the ability to have a two-way conversation that stays logical. Whether the child is doing pretend play and talking about the dollies flying to the moon or whether they’re talking about where they’re going to have dinner or why they feel happy or sad, they’ve got to be


able to link their ideas to our ideas. The key here is, as we talked about last week, to keep challenging them and giving them the extra practice until they get the hang of it.

To be sure, many of the children don't do this, because of auditory processing problems, or because the receptive side of language is harder for them to be expressive, so they don't always understand what we're saying. So we'll simplify, we'll repeat it, we'll use a lot of affective or emotional intonation, and we'll give them multiple-choice help until they get it. And with practice, the receptive side will get stronger and stronger. The whole concept here is that the side pathways that we're developing to these skills need more practice and more patience on our part. Also, the other principle is they need very, very high affect. So, when we're asking the child to connect his ideas to our ideas just to get the base for logical thinking cooking, we'll take highly emotionally important situations – you know, “Do you want the cookie or the broccoli and why?” Because that child will favor the cookie so strongly they'll be very motivated to work hard on that auditory processing. Or do they want to play with this friend, who we know they like, versus go to sleep, which we know they don't like. So we have to pick high-affect situations to help them connect ideas together. But once we do that we want to get to the multi-causal thinking.

This is just an extension of causal logical thinking. We say to a child, “Why do you want to go outside?” and the child says, “To play,” you say “Oh, that's wonderful! Playing is great! I understand why you want to go outside to play! But are there other reasons, too? Can you think of one more reason why you want to go outside?” The child might think and, not right away but after trying a few times and getting some multiple choice help, then the child might say, “Oh, because the sun is out,” or “Because I can run and I love to run when I go outside.” Later on we may say, “Can you come up with a third reason?”

Or the child wants a favorite cookie. “Gee, why do you want the cookie?” “Well, Mommy, I'm hungry!” “Oh, that's great, yeah, well, I'm getting the cookie! Can you think of another reason why you want that cookie?” “Well, Mommy, it tastes good.” “And another reason?” “Well, you know chocolate chip is my favorite and that's what we have.” Okay, now you're getting into multi-causal thinking; giving multiple reasons.

We also want to encourage what we call triangular thinking, which extends from multi-causal thinking. Here's where a child is going to find indirect solutions to problems. For example, some children will learn this naturally: They'll go ask Mommy for something and Mommy will say no and they'll go ask Daddy. This is good because this is triangular thinking. The child is realizing that there is not just one pathway to that cookie, but there are two pathways. If Mommy doesn't give it to you, maybe Daddy will




give it to you. Or the child is learning that they want to play with little Alice, but little Alice is always busy. But they notice that Alice is good friends with Monica. So, the clever child becomes friends with Monica and invites Monica over to play, to get Alice a little jealous, and then Alice wants to join Monica and she'll come over, too, because she's best friends with Monica. So, the child who really wanted Alice in the first place might go through Monica to get Alice to come over to her house and play.

Adults get involved in these kinds of triangular thinking patterns all the time and we call it "manipulation," or "cunning" or "cleverness." But, this is a rather advanced form of thinking. And so when a child begins doing this naturally and as they get into multi-causal thinking, you'll see children beginning to naturally think and problem-solve in these triangular ways. We don't want to scold them and say, "Gee, this is a bad thing to do," or "Gee, you're being manipulative." If a child outright lies, that's manipulation of a different kind. We want to tell them it's not appropriate to lie and teach them to value honesty. But if they're showing cleverness and cunning in their thinking and really learning to problem solve in many ways, that's a valuable thinking skill for children that will help them become more abstract and more reflective in their thinking.

We want to promote triangular thinking so when a child is involved in multi-causal thinking for another reason – let's say the child wanted to go to a special playground and says, "Mommy, come take me to the place with the big slide." And you say, "I can't do it, sweetheart; I've got work to do – I've got to clean the house" or whatever. Instead of saying, "Go ask Daddy; see if he'll do it," see if the child comes up with it. Say, "Well, gee, is there any other way you could get to your slide?" And let the child figure it out and say, "Gee, well I could ask Daddy or I could ask my big brother or my big sister. Or I could call my friend, Tommy, across the street and see if his mommy and daddy want to go to the park." Again, that is teaching that there are many roads to Rome. That's teaching there are many ways to solve a problem.


So, in order to teach multi-causal thinking and triangular thinking, go after more than one cause. And go after different kinds of solutions to a problem. Don't supply (an answer) for the child – challenge the child to come up with it. Use the Socratic method. "Well, what else can we do? How else can we do it?" Or if the child is frustrated because Tommy won't play with him, "Well, how can you get Tommy to come over to the house?" "Well, gee, Tommy – I'm not his favorite friend. His favorite friend is Bobby." "Well, is there any way you can use that fact to get Tommy to be friends with you too?" "Well, gee. Hmm. Maybe I could become friends with Bobby also. Then he'll play with me, too." So that's a way of promoting that kind of thinking.



Now, obviously, we have to think that way ourselves, as parents we can promote (this kind of thinking). And, again, children with special needs with multi-causal thinking and triangular thinking will get promoted by doing it a lot. Don't confuse the child with complex new words or vocabulary that he may find hard to understand. When you're trying to teach a new way of thinking there are two principles: One, teach it in a situation where the child is very emotionally invested, like how to get a certain child to play with him or how to get this cookie or how to get this certain activity like going down the big slide in the park. You want to create a high-affect situation to teach it.

And, two, teach it using words and concepts the child already understands. In other words, don't introduce new vocabulary or new words when you're teaching new thinking styles. So, use familiar words, familiar concepts, and high emotionally pleasurable situations. Those are the keys. Often in school, for example, we try to teach new ways of thinking while teaching new vocabulary. So a child will be reading a story in a book that has all kinds of new words and then being asked to explain the motives of the character. Well, the child is so overwhelmed by mastering new words he can hardly think about the motives of the characters. Or we're teaching a child, you know, at a later age, to write an essay. But, again, it's about a topic he's not familiar with so we see just a regurgitation of facts because he can't master the new words in the essay and think of how you prove a point.

So, for example, when I teach a child to master the structure of an essay I'll pick a topic that he's very familiar with and that he's very emotionally invested in. Like, "Gee, can you prove to me why you're better than your brother at something or better than your sister at something or why your parents are unfair if they favor so-and-so over you?" You pick something that's really emotionally meaningful like that. Or, "Can you prove to me why you ought to have more TV time or more computer time?" Then I get a very coherent, logical essay. As the child talks he's a very good lawyer, basically. And then I can say, "Okay, let's see what you said." We diagram it for the child and he sees that he has a main point, he proved his point, and he repeated it in the conclusion. Whereas if I ask him to talk about a book he's read it's just a regurgitation of facts in a disorganized way. It all has to do with the child's ability to think and it's fueled by having an emotional goal in mind. So we know all our kids are great lawyers when they're arguing for an extra five minutes of time at night or arguing for an extra cookie or arguing why they're more deserving than a sibling, but they may be incoherent when it comes to writing an essay about a book. The difference is, in one situation we keep it simple and we keep it emotionally meaningful, but that's where we teach thinking skills. And then the child learns to apply that to other situations such as a book report, or such as analyzing the Civil War or analyzing the Revolutionary War.




That's the secret for teaching these high-level thinking skills. Do it a lot, about ten times more than you do with a child without challenges; keep it simple; keep it emotionally meaningful; and don't introduce new words and concepts while you're teaching the thinking skills. Teach it in everyday situations. Take advantage of natural learning. Those are the keys. You're following the child's lead, taking advantage of natural learning, going for high affect, not introducing new words and concepts and that's how we teach the thinking skills.

So we've talked about multi-causal thinking and triangular thinking – the first stage. Typically this is mastered by about age 7, sometimes by age 6. In children with challenges, they master this skill at age 8 or 9 or 10, 11, 12 or 13, 14 or we've had many children in their 20's and even early 30's who are still mastering multi-causal thinking and triangular thinking. But let's say even a person at age 18 who's working with this, can you imagine how much their world and life opens up and how much of a better problem-solver they are? Instead of just being able to be logical some of the time, they can actually advance to giving you many reasons for things and thinking in indirect ways to solve problems. How much of a better problem solver, how much more they can function independently in the world, even if they're learning these skills as a 17- or 18-year old! They'll improve their functioning by 100-200 percent, making this leap at whatever age the person does it.

The brain is developing into the ages in the 50's and 60's, so it's never too late to master these skills. The attitude we take is once you've got one level, you go for the next level, whether you're a 35-year old or a seven-year old. So, the key thing with children or teenagers or young adults with special needs is keep trying for the next level in thinking. The problem with most of our curriculum and educational approaches is we stop teaching thinking skills once children get to a certain age. In teaching "daily living skills" or "practical skills," we forget the important point that your ability to be practical and master daily living skills will be proportional to your thinking skills and the two are not mutually exclusive.

You can be teaching thinking as you're learning to cross the street, as you're learning to take a train, as you're learning to go on the bus, as you're learning to buy a candy bar, as you're learning to cooperate in cleaning your room – all these situations which are practical skills to be learned can be learned in a thinking way or just a rote memory based way. If you teach in a rote memory based way, you're losing a valuable opportunity. And so the key is to teach the skills you want to teach, whether it's high levels of math or high levels of science or high levels of English literature or, simply, how to buy something in the store. Teach it with thinking – this is critical policy shift we have to have in our educational and family attitudes towards children and youth and young




adults with special needs. We never stop working on the hierarchy of thinking and the thinking skills should be embedded in all of the goals we have and all of the interactions we have. In that way we're not undermining the opportunity of our children to advance.

Now, the next level up is the level going from multi-causal and triangular thinking, to what we call "gray area" thinking. Technically, we call this "gray area differentiated thinking" and this also involves comparative thinking. So this capacity for gray area thinking, which includes comparative thinking, is maybe best exemplified when we ask a child a question like, "Gee, who do you like better? Joey or Sammy? And why?" Now, typically a five-year old – if you ask him that question – "Who do you like better, Joey or Sammy and why," will say, "I like Sammy because he is fun to play with." So they'll give you one reason, but they won't compare the two. They won't say, "Well he's *more* fun to play with than Joey," they'll just say "He's fun to play with." So, they'll give you one characteristic about the person, they don't really compare the two. But, typically, an eight-year old, when you say, "Well, gee, who do you like better? Sammy or Joey and why?" They'll say, "Well, I like Sammy better than Joey because he is more fun to play with and he and I like the same games and Joey likes different games I don't like so much." So, child is actually comparing the two, comparing A and B, on often more than one dimension.

Also the eight-year old will be able to do something else. If you say, "Well, gee, how much more do you like Sammy than Joey?" he'll say, "Oh, just a little bit more. Not a whole lot because Joey also has some things that are fun. He's got some great toys at his house and sometimes he doesn't want to play the things I do, but sometimes he does, and I like playing with him too. So, it's just a little bit." And if you say, "Well, can you show me with your hands?" they'll show you a little bit with their hands, as opposed to answering another question when they'll say, "It's a huge difference." So, children are being able to typically by eight or so, to give you degrees of things: how happy, how sad, how angry they are, how much they like A better than B and give you multiple reasons for liking A better than B, really compare A and B, and also talk about the degree to which they're different or similar. This ability for looking at the degrees of things while you're comparing things is what we call gray area differentiated thinking, or gray area thinking.


Recently, when I was watching the news I heard a gentleman from another country talking about international politics say "Look, we live in a gray area world and we can't apply all or nothing thinking to a gray area world." We see this in adults. We see some adults like definitive, clear, one-way-or-the-other-way answers. Other adults look for more nuanced, gray area solutions – a little bit of that or a little bit of this.



Now, to be fair to political decision-making as an illustration of what we're talking about, sometimes a gray-area thinking pattern, a nuanced thinking pattern that looks at the degrees of things – looks at the subtlety of events – can lead to a definitive conclusion. So, to use another example from everyday family life, a family may weigh all the pros and cons about living in their current house or moving to another house. They may think about the expense involved, think about the benefits of the new school system, think about the new neighborhood – whether there'll be more children involved – and actually weigh each of these advantages as compared to the amount of money it's going to cost and what will this mean to their college investment fund, etc. It's very nuanced, subtle, gray-area thinking to make comparisons, emotionally judge those comparisons, and then reach a decision, "Yes, therefore we're going to buy a new house." So, the ultimate decision is a definitive decision but it's arrived at through gray area thinking. That's very different than a decision that just looks at one reason – "Oh, we need a bigger house, therefore let's go get a house and not look at whether we can afford it or whether it's going to take money away from the college fund or whether it's a neighborhood with lots of kids, whether the school system's good," etc.

So, you can make a decision that's a definitive one based on gray area thinking or based on kind of "all or nothing" thinking. Gray area thinking is the ability for subtlety, the ability for nuance, and it involves looking at shades of gray, the degree to which you believe a certain way. Now the way to promote gray area thinking in all children, and especially children with special needs, is, again, to practice it. So, when you're asking a child, "Well, who do you like better, Tommy or Jimmy?" or "Which food do you want tonight?" or "Which character in this novel you read is your favorite?" or "Which author do you like to read better, Mark Twain or Tolstoy?" or "Which war was important in the history of the United States, the Civil War or the Revolutionary War?" As you're asking these questions, either from academic life or from everyday life, you want to help the child actually compare the two and go further – to give you the degree to which they prefer one answer to the other.

Here, too, it's just simply a matter of practicing it. And it's the same principles that we had for multi-causal, triangular thinking, which is pick high-affect situations, "Which friend do you like better," "Which food do you like better" or if the child is really an avid reader, "Which book or which character do you like better," or "Which character is more like you" or if it's a very advanced-thinking child, "Which character is more moral" or "Which character best reflected the time that they lived in," if they're both 18<sup>th</sup> century characters, let's say. They can be very sophisticated questions, but it involves gray-area thinking.




So it could be anything from a graduate level question – “Which character better represents the age that they lived in ” to a very simple question, “Which ice cream do you like better?” Both can focus on gray-area thinking, but pick a subject the person is really interested in, emotionally invested in, that doesn’t involve any new concepts, and then ask for the shades of gray, ask for the degree. So, it’s “Which character better reflects the age they lived in, and why, and to what degree?” “How much better does this guy reflect the 18<sup>th</sup> century than that guy” and let them explain the degree of it, the shades of gray of it.

Do it also in the world of feelings also. When a person says, “I’m happy” or “I’m sad,” ask “Well, *how* happy or sad and how does that compare to the way you felt yesterday?” This is what gets at gray-area thinking. Again, with children with special needs, do more of it, expect it to take a little longer to take hold, and you have to even be more focused on high affect, meaningful context to teach it, focus more on not using new words or new vocabulary while you’re trying to teach him.

Obviously, here, in gray area thinking, this is very necessary for writing a good essay. When they get into academic life to really prove a point it’s not enough just to say, “Well, the boy in the story liked dogs for three reasons. One, because in the story he petted a dog, he pet a dog, and he didn’t kick a dog when he had a chance to.” I mean, yes that’s an essay, and it’s logical – “Therefore, he liked dogs.” And that might be a decent second grade essay. But if you want to write a sixth grade essay, you could say, “I know that the boy like dogs,” and then try to do some gray area thinking about it. “Oh, well, because we saw in the story that he went to the farm and he had a choice between playing with the dog or riding on the horse and he chose the dog. And we noticed that he enjoyed the horse, too, but he was much, much happier when he got to play with the dog. And that’s when he also went over and called his friend to come play with him and he became more social, as well,” etc., etc., etc. So, you give several reasons why he liked the dog and you give subtle, gray area reasons comparing it to his attitude toward the horse or the wolf or the other animals on the farm.

You can do that in a very subtle, nuanced, gray area way for a sixth grade level essay or you can do it in a second grade way. Challenge the child toward the gray area thinking in academic life, in the everyday life of feelings, talking about food, and talking about friendships. It’s just doing it in everyday context off the child’s lead and using high affect that teaches the child to become a gray area thinker. When we get to one level, we can usually “perk” the child into the next level. The idea is not to skip levels and try to teach the child to be a gray area thinker who’s still not even logical in the way he answers questions – then you’ve got to solidify logical thinking – or teach him to be a gray area




thinker before he can give you multiple reasons for something. So, you've got to work up the ladder that I'm giving you.

Now, if that works out well, then we get to the next level, which is thinking off an internal standard and thinking off an internal sense of self. We call this level truly reflective thinking. This is usually reached between the ages of 10 to 14 and will vary even among children without challenges when they arrive at this, depending upon just the way they've experienced the world and the way their nervous system is growing. Again, for none of these skills is early necessarily better. It's just a question of getting there and then practicing it and embellishing it.

By thinking off their internal sense of self and an internal standard - true reflective thinking - we mean abilities such as in the emotional area a child can say things like, "Gee, I'm angrier than I normally am in this situation." Or, "I don't know why I'm so angry today - it's not typically the way I feel." So, here a child is comparing the feeling of the moment - the anger - to a baseline, a sense of self - an internal standard of how they ordinarily are. "I'm angrier than I ordinarily am in this situation." So, they really have to be thinking in two frames of reference at the same time.

This is the same capacity that enables a child to say "My peer group is making fun of me and making me feel like a turkey for not drinking the beer (or not smoking that cigarette), but I, internally, feel like a good guy (or a good gal/good person) because I'm living up to what I think is right. I don't think it's proper to drink on school grounds or to smoke" or whatever. So, here's a child who can kind of have their self-esteem, have their sense of self, supported by some ongoing internal standard and compare the feeling of the moment to that internal standard. That's good for moral behavior and judgment, obviously, we need it getting into the teen years, so it comes in just at the right time. But you need it, also, just to be able to evaluate yourself, to evaluate how you feel, you know, "Is this typically me or is this different from me? Am I sadder than I usually am, and if so, why?" So it's necessary for self-exploratory thinking.


Basically, another way to think about thinking off an internal standard, thinking off an internal sense of self, is now the child can think about thinking; can evaluate their own thoughts; can evaluate his own behavior and judgment. Another way of thinking about this stage is kind of an inner judge. You're judging yourself and judging others, but not in a rigid way, not "This is right or wrong," but in terms of an ongoing, evolving developing internal standard that changes as you get older and more experienced. So, five years later you might say, "Gee, I'm angrier than I should be in this situation, but it's highly justified because this guy is a real turkey, blah blah blah blah." He may have



more experience and he may fine tune that judgment a bit more, and understand why he got angrier in that situation.

If you translate this to writing essays, now you can compare Mark Twain and Tolstoy and answer not only the question “Which one reflected his age better, was a better spokesperson for the time he lived in,” but, also “Which one was also more similar to me as a person, which one did I like better? Which one resonates with my experiences today?” So you could say, “Which one reflected his age better?” and “Which one’s depiction of his age characterizes today’s world as reflected in the eyes of typical, growing kids like myself?” Okay, now to do that is a complicated, subtle academic task where you’re evaluating your view of the world, comparing it to the view of the world you have to decipher in the work of Tolstoy and the work of Mark Twain. You’re doing a complicated analysis. That involves thinking off an internal standard. The ability to evaluate your own essay, to say, “Gee, I did a pretty good job and I got a good topic sentence then I proved my point, and I have a good summary statement.” That ability to evaluate your own essay is, again, having that internal standard of what an essay should be and then evaluating it when you evaluate yourself.

So, whether you’re evaluating your feelings, evaluating your essay, evaluating how well you studied for an exam or didn’t study, evaluating whether or not you deserve to be punished by your parents or by the school for a particular activity – that all involves thinking off an internal standard. High-level work in any field involves thinking off an internal standard. If you think of the ability to make inferences, to draw new conclusions – that, too, involves judging your conclusions, saying this is original, this is not original. So let’s you’ve got a problem and you’ve got to come up with a novel solution. You’ve got to be able to judge different solutions to the problem until you come up with one and say, “Ah! This is a new one. This one no one’s thought of before. This is a novel one. This is a good, creative solution.” So, the ability to make an inference, for example, depends on the ability for some level of thinking off an internal standard. An inference means taking something that’s not concretely related to the object. For example, if you see a vase and you say, “Gee, that vase looks like a vase, but it also looks like a rocket ship and I wonder if this shows that the people in the 2<sup>nd</sup> century B.C. who made this vase were visited by people from outer space because it actually looks like a rocket ship.” That’s an inference. That requires a high level of reflective thinking and to be that creative you’ve got to, again, have an internal standard of how people typically would have thought about that in the 2<sup>nd</sup> century, B.C., how I would have thought about it, were I a person back then, but there’s a slight twist that vase wasn’t typical for that time period if I were there, and I wonder how they got there and you come up with this creative idea, “Well, maybe they actually saw a rocket ship or a flying saucer” or something. Okay,




now, you may think that's an illogical conclusion but that's just a speculation. I know there's no real evidence for it. And, again, that's evaluating your own idea, saying that's a speculation, not a proof, but it is an interesting one to raise. So, that's a nice inference to make and a nice kind of speculation to make. There we have a good example of more high-levels of abstract thinking.

Now, the ability for theory of mind, the ability for figuring out how other people feel, taking other people's perspective, is derivative or is an elaboration of the same capacity for thinking off an internal standard, an internal sense of self, what we call true reflective thinking. So, if I want to know how someone else feels in a situation, I've got to first say to myself, "Gee, okay, my friend, Johnny, just got rejected by a girl he liked. How would I feel in that situation? I would feel sad and depressed. I wonder if Johnny also feels sad and depressed. But, gee, Johnny's jumping around and he's kind of hyper, he's kind of going up to every new girl in school and trying to meet them. He's not acting sad and depressed. I wonder what he's doing. Gee, well, I wonder if he's not trying to cheer himself up by just acting the opposite. Or maybe he actually didn't like that girl that much that he was seeing or trying to get a date with. Maybe he was just doing it because of peer pressure because she's popular. Maybe he's actually happy that he no longer has the burden of having to try and now he's going after girls he really likes."

So, here's an example of where a child is considering different hypotheses about how someone else might feel by putting himself in their situation, not necessarily assuming that the other person feels the way they do, but considering different alternatives. But it starts with the ability to have a sense of your "self," how you would feel – project yourself into other people's shoes – and then consider, again, whether that's consistent with what you observe, how the person is behaving, and then consider alternative hypotheses.

All right, well this is good psychological thinking. This is a very high level of empathy. Empathy is not simply in saying, "The other person feels as I do," but sensing how the other person feels through the way you might feel in their situation, but then being objective about it and evaluating your conclusions and considering an alternative hypothesis. That's a high level of empathy. That's a high level of theory of mind when it comes to emotions. I mean, there are other theory-of-mind tasks that involve physical perspective taking. You know, if I were looking at the house from the back, you know, Johnny's standing over there and I'm standing here, I'm looking at the front of the house and he's looking at the back to the house, what do we see that's different, realizing that he'll see a different part of the house than I would or he'll see a different part of the elephant than I would. But from the emotional or social reasoning, that would mean that




he's coming from a different background that I have. Just like he sees a different part of the house or a different part of the elephant - he's seeing the back while I'm seeing the front, he comes from a different upbringing, therefore, he might have a different feeling in the situation than I would have.

That all has to do with perspective-taking with theory of mind, with being able to project yourself into someone else's shoes, but also see the differences in their perspective and your perspective. But when we look at the question we raised before, whether Twain or Tolstoy was a better representative of their times and which one brought more insight into modern times, again we're projecting ourselves back into their lives and then projecting ourselves forward into current times again and considering multiple hypotheses, looking at the data and the evidence.

So this is all complicated reasoning which involves the common feature of being able to hold different perspectives in mind at the same time: your own perspective, your own stable sense of self and internal standards and then, off of that, consider other possibilities. That's what we mean by this level of thinking that we say is, "thinking off an internal standard" or "internal sense of self," which leads to higher levels of empathy, higher levels of perspective-taking, higher levels of theory of mind, and leads to the kind of thinking that's characteristic of all high-level academic work and all levels of "work" work and high-level problem solving.

It's this level of reflective thinking that we have to have all our children achieve. For children with special needs, again, it may be a longer, slower pathway. The key is high affect, high intensity affective interactions. Use situations they're very familiar with, follow their natural lead, teach it in everyday situations, and don't introduce new vocabulary or new words or new concepts to it. Then apply it to more and more challenging tasks that they're not as emotionally invested in, like books they're reading or theories they're evaluating. But it is basically the ability to evaluate your own thinking - to become a judge.

The simple theme that runs through this is, if you want to promote this as a parent, is get your child's opinions. Always ask them "Well, what do you think? And why do you think it? How does that compare to the way you felt a few weeks ago or last year?" Or "How do you think you might think about it in the future?" And ask that simple question, "What do you think? What's your opinion? How does that compare to how you used to feel? How will that compare to how you think you might feel in the future?" You ask that of your thirteen year-old, or your 18-year old, or your 20-year old or your 30-year old and you're promoting an internal standard and to think off of it.




The key is we're so constantly judging our children, telling them whether an essay is good or bad, and now we ask our children, "What do you think of that essay? How does that compare to the one you wrote a week ago? How would that compare to one you might write in the future when you have more time?" "Well, mom, this one is pretty hurried, I guess. It's not quite what I could do if I had more time." Okay, that's worth all the tea in China because your child is now judging his own behavior! That's what's going to set them up to go off to college or off to a job and be able to assess themselves and be their own judge because that's what you need for independent functioning in life – to be able to judge your own thoughts, your own behavior, your own feelings. If a person says, "Gee, I'm awfully depressed," and you say, "Well, how come? What do you think of that? How does that compare with how you typically are? What's special about today?" Help the person reason it through and that will promote that high level of thinking.

Now, we're just about finishing up for today. The reason why I took the whole time today talking about this is two-fold. One, it's an important topic; and two, many of you have been writing and asking about how we promote a high level of thinking.

Remember, the key with children with special needs is to take your time, don't be on any timetable, and don't skip over steps. Go from logical to multi-causal to gray-area and then to thinking off an internal standard. When you're working on one level – even thinking off an internal standard – you're always also working on gray-area thinking and multi-causal thinking. So you're always asking for degrees of things, you're always asking for extra reasons for things. You're always working on all these advanced levels at the same time. Also, be patient, use high emotion, use practical, everyday situations - that's what will promote high-level thinking in children with special needs. And the only way we know if a child has reached the peak of their capacity is when they haven't made progress for two years. So, never assume a ceiling on a child. Always assume you can get to one more level, and after that level, one more level.

Life is continuing to master additional levels of thinking, even into our 60's and 70's. That's why in many other cultures the wise men are the elders, not because they're remembering more facts, but because they're infusing their thinking with more experience and they're getting into higher levels of actual reflective thinking. Experience counts. Always keep working at it. Never assume a ceiling. It doesn't mean every child is going to be an Einstein or every child is going to be a Socrates. And even among children without challenges, not everyone is going to be an Einstein or a Socrates. But it does mean that we can all continue to make progress and move forward slow and steady. The turtle will often make more progress than the rabbit or the hare if you're steady and consistent about it.



Now, as I mentioned we didn't take any questions today because we're still working on our technology. Unfortunately, we need to get a new mixing box so we can receive your calls. But that should be in place by next week and we can take your calls live. Many of you were kind enough to write in with questions and next week what I'm going to do is catch up. Next week is going to be question week. So, instead of having a new topic next week, we've accumulated questions over the past few weeks while we've been fooling around with the technology.

Hopefully we'll be able to take live calls next week, so please email us and let us know if you want to call in live or just call in live during the show. The telephone number and information will be up on the website. Next week we're going to answer some of the questions that seem the most compelling and pressing that we've accumulated over the last few weeks, such as what to do when a child is humming in class - how to turn that into something constructive and many other questions like that that were good questions that have come in this week. We'll talk about the basics of everything from toilet training to eating problems, to dealing with aggressions, to dealing with various school issues, and next week will be question week. We'll look forward speaking to you next week and to answering a whole bunch of questions. Thank you for joining us.