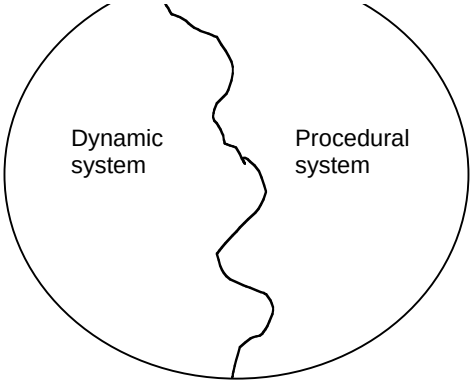

The Dynamic Information Processing System – Basic Principles Behind RDI

Stacy Hultgren

Nancy Schwartz, PhD was a recent speaker for our Parent Training Series. Dr. Schwartz is a speech therapist in Ridgefield, whose practice is largely made up of kids with autism spectrum disorders. She has many years' experience working with our kids – getting them to speak, teaching them language skills through a variety of methods, and most recently has been certified in Relationship Development Intervention, or RDI. RDI has become very popular recently, at least in part due to the positive results that many families claim, and also because of the preliminary research into its efficacy (Dr. Gutstein's research manuscript will soon be published in the Journal of Autism and Developmental Disorders, a well respected professional journal). Dr. Schwartz gave us some basic information on the principles behind RDI, although please keep in mind that some of the ideas presented to our parents and replicated in this article are not specific to RDI, but are her own thoughts and conclusions from her many years of experience as a therapist.

The Concept of Relatedness

We should not think about relationships, language, and thinking as three separate areas, Dr. Schwartz explains, because you cannot have a conversation without being related, and you cannot notice and think about people and things if you are not connected (related) to it. Relationship Development Intervention, or RDI, is a programmatic way of thinking about all three as one concept.

Dr. Schwartz says that her involvement in RDI has changed her view of what autism is. The *DSM IV* (the manual professionals use to diagnose patients) does not really define autism itself, but rather gives a simple list of symptoms - deficits in language, social ability, behavior, etc. – to look for and these symptoms will appear different in every child. However, aside from those symptoms, there must be something else that defines autism; "What is it that's telling me in my gut that this child is on the autism spectrum. It's not about the 12 symptoms." *Something* is universal to each child on the spectrum, is chronic, and is unique from any other disorder. She now believes that the core deficit for autism is "the lack of use of a dynamic informational processing system." The symptoms that we see when we observe a child with autism occur *with* autism (co-morbid), but they are not the cause. We can work on improving those co-morbid things – we can provide language therapy for apraxia, OT for sensory issues, and behavior intervention to eliminate some of the behaviors, but what remains is still the core deficit. We offer supports such as schedules, Social Stories, etc. that may help a child get through the day, but they are only supports, they do not strengthen the weak areas of learning.

Supports are effective for what they do, but we cannot rely on supports alone because when they are not available, the child is still unable to function effectively. We need to focus on strengthening the information processing system so they will someday no longer need the supports.

Deficits in Information Processing

The information processing area is actually two types of systems, '*dynamic'* and '*procedural*', that work in different ways to process and store all kinds of information. The procedural system involves rote learning and following rules and routines. It's what we use to cook from a recipe, brush our teeth, and do many things that we need to do without having to concentrate directly on them. For example, we can walk upstairs without having to think about our steps so we can concentrate on the conversation we are having at the same time. The dynamic system in involved in knowing HOW to do things. It is where many of the higher level thinking, communication, and relatedness happens.

The dynamic system contains the areas of processing that includes:

Referencing - the ability to share emotions and 'reference' for information about how others think and feel. It means feeling an emotion yourself, and then checking with the person near you to see if they have the same emotion. Typical children learn about the face, emotions, and sharing, and respond to them before the age of one - long before they can say words or recognize labels. This is how children naturally learn about their world. If you watch babies, you'll see how often they check with Mom by looking for signals in her face that communicate what is happening around them, and if they should feel happy, sad, or fearful. Older kids look to adults faces to tell them when they are performing well for teachers or coaches, if they are in trouble with Mom, or whether or not to laugh at a situation that might otherwise be embarrassing. Dr. Schwartz tells us that by the age of 3, typical children have clocked 4000 hours of referencing. (*Editors Note: Dr. Ami Klin from the Yale Child Study Center is very involved in research into what babies, both typical and with autism spectrum disorders, look at. Their research shows that typical babies and young children reference faces – look between one face and another to understand the meaning of a given situation and are mostly focused on the eyes; kids with ASD focus on other things in the room or on the speaker's mouth only. They miss about 80% of the nonverbal messages being given because they don't notice them or consider them irrelevant*. *Functional MRI's show that a specific part of the brain lights up when typical kids look at faces. For kids with ASD, a different part of the brain lights up, theoretically because these kids have had no practice looking.*) Kids with ASD don't look for the emotions of others; they don't "check in" with others to verify their own feelings. They also don't share their own emotions with others.

Social coordination - is all about doing something together, even if it's just walking together. Both walkers must coordinate their actions so they are doing it *together,* and most of us do this without even being aware of it. When that coordination doesn't happen, one person is walking ahead of the other one, interaction is unlikely to happen, and they have sent negative signals to the walker they left behind.

Declarative language – spoken and non-verbal communication to express interest, share perceptions and feelings, make comments (i.e. "I hate when I feel sick", "I don't really like that car"). Questions and responses to a question are NOT declarative statements. Often we get kids to talk by asking them questions so they are forced to give a response, but most natural conversation is not based upon questions and answers.

Flexible thinking – the ability to rapidly adapt, change strategies and alter plans based upon changing circumstances (i.e. if you don't have a fork to eat with, you can use a spoon). Patterns are established quickly, especially since kids with ASD are natural rule-makers. Eliminating established patterns strengthens the dynamic system, but it must be done using small planned steps. Building flexibility should be part of the program before those patterns are established, if possible, and that means early intervention that should begin as soon as there is a suspicion of an autism spectrum disorder (and this would most often mean in the home). Brain studies have shown that if a person

practices a skill, any skill, the related area of the brain gets bigger. It follows then, that if we practice flexibility, we can hope that this area of the brain will develop. Flexibility cannot be achieved in one step; it requires specific programming and chosen activities so the child *learns* to accept changes. For instance, children with ASD need supports, but they should be changeable supports – like schedules that change daily or weekly. Using different utensils at meals, taking different routes home from school, or cutting a sandwich different ways teaches the idea that the world is constantly changing, and that they themselves can change things. It also helps teach choice making - If there's no apple juice today, they need to choose something else. A lack of flexibility seriously affects the ability to succeed in life, because life *requires* flexibility.

Relational information processing – understanding the larger context, and being able to solve problems that have multiple solutions or that can only be solved by understanding specific attributes or relations of two elements. For example, typical people don't pick the clothing they wear based solely on what they like, they *also* base their decision on what is appropriate for the setting, the activity, the temperature, etc. Because kids with ASD do not choose clothing relative to these other factors, they will often only wear their 'favorite', including sweaters even though the temperature has warmed. Relativity also comes into play when doing activities like playing catch – they must regulate their throw by distance, size of the ball, age of the catcher – in other words, they have to '*coordinate'* their actions to fit the '*relative'* factors of the situation. "Our kids don't do that – they have a way of doing something, and that's it." Dr. Schwartz says this lack of ability is because they don't reference the entire context. They are comfortable within a static system (procedural) so they can predict and not have to deal with change.

Foresight and hindsight – the ability to reflect on past experiences and to anticipate potential future scenarios (i.e. using past mistakes to develop new strategies).

For most of us, the dynamic system is better developed than the procedural system. However, for kids with ASD, the procedural system is stronger; that is why they are so good at memorizing facts and doing things in a rote manner. Most people can flip back and forth between systems, and use whichever one – or both - that is called for in a given situation. Kids with ASD, however, find this difficult to do, and naturally use their stronger system – the procedural system – to process all, or most, of the given information. Some kids with ASD have a better-developed dynamic system than others, which is perhaps why we see some kids with higher developed language and social skills. The weaker the dynamic system, the more stuck the kids are likely to become on routines, because they are only doing things in a rote way. Their dynamic system is weaker, but there is no reason to believe that it can't be increased.

RDI

RDI is not social training. The goal of using RDI methods is to increase the dynamic system without getting rid of the procedural – everyone needs both systems to be intact. It is not about teaching social rules (which involves memorization – procedural), but improving the ability of the dynamic system to work. It is about laying a foundation that will lead to better interaction skills, friendship, empathy, affect, etc. It's about learning to process information in a relative way, "things are not absolute". RDI is still changing and developing, so RDI itself, Dr. Schwartz, says, is a dynamic system. People get stuck in trying to accommodate kids with supports, and that gets harder as kids get older and the supports are not always available, so teaching how to think and process in a more natural and flexible way is much more productive and effective.

There are 23 stages of relational development containing over 300 measurable objectives, according to Dr. Gutstein, and a child's stages are assessed through a series of activities observed by a trained RDI therapist. A child's skills will not all be at the same level, but activities for each skill are designed around the level they are at. Basic skills, obviously, take more precedence than more

sophisticated ones, so when a child's skills are severely splintered the lower stages need work first. The RDI program is a very complex system of assessment, activities, goals, and measuring progress.

Dr. Schwartz gave us many hands-on examples of how RDI is delivered. The purpose of all activities in the basic stage is to get the child to ***look*** at the person interacting with them. Eventually, the goal is to have that child take cues from the face as to what to do next, or what might happen next. That's how they learn to read faces. If, for instance, the therapist is trying to engage the child in looking at the face, she may use tangible items like a balloon that she places in front of, or next to, her own face. But the balloon is not the focus – the balloon is simply the tool to get the child to look at her face, to see the expressions, and relate them to the balloon. She can do this by holding the balloon in front of her face and showing surprise and excitement and changing her face as the anticipation builds when the balloon disappears behind her back, gets bigger as she blows into it, or pops. The activity is about practicing engagement with another person's face and learning to look for clues in it about what will happen next – but the therapist never actually says the words "Look at me", as we do in so many other programs. When giving the child a plate that food will be put on, she might say, in excited tones, "here comes the plate", hold it up and sing, drop the plate, put it on her head, anything to get them to look at it and at her. With her face, she will tell him what unexpected thing will happen next, what pieces to use in a game, what choices can be made, etc. so he will learn the importance of the communication that faces give. She and her therapists use big emotions to start out with, but these can be faded to more natural expressions as the child improves his ability to seek out the face and recognize some simple emotions. They learn emotions better by experiencing them than they would in a lesson, so she includes opportunities for them to feel the emotions like excitement or apprehension. She does not use language during many activities because she wants the focus on the face, not on the words, but silence is not necessary – when she speaks she uses about 80% declarative statements and only 20% are questions or directions. Some kids are 'hyper verbal' and talk a lot, but they are focusing on their stream of facts, and some only know how to respond in a fixed way, so it is important to minimize the language involved. You can use some of the activities in everyday tasks; almost anything can be made into a game, even laundry. The child needs to know their role in the game for competency and confidence. If they feel competent, they will be more willing to engage in a game.

The assessment process through Dr. Schwartz includes video of the child in natural settings, a review of medical and educational records, a series of exercises that the parent does with the child, and then Dr. Schwartz develops the program based on all of those factors. As part of the program, she trains the parent to use activities that she found were successful for that child. Parents can then send videos to her for feedback on what they are doing. Sometimes, since this is at least partially a genetic disorder, families don't have a healthy dynamic system either, and can have trouble expressing emotions on their face for their child to read. Sometimes, Dr. Schwartz says, "They have to learn this stuff too." Part of the assessment process involves figuring out what will engage the child to look at her. She will use anything – peek-a-boo, a sticker on her nose, soap foam on her face, anything that will get the child's attention while he learns that her face is the key to the activity. Dr. Schwartz has always been a big supporter of building change into the day - putting things in places they don't belong, changing the characters in stories, putting soup out with no spoon and figuring out ways to eat it. Always pushing for ways to practice divergent thinking. Even people who do not use the full RDI program can still do activities and games that involve flexible thinking, face referencing and declarative language. For instance, if you do running games where you count off 1-2-3-GO, you can sometimes count to 4 or use another word like "spaghetti" instead of GO; anything to change it so they have to depend on watching you to know when to go. Put tape over your mouth to show you can't talk, or earmuffs to show you can't hear, and do an activity without words to spotlight the face. You can play Scrabble, seated face to face, and talk about the game (restrict a kid with Asperger's from talking about their special interest). Simply concentrate on using declaratives throughout the day – it certainly can't hurt, and he or she may gain some independence in conversation. Changing the rules of games (they may not adjust well at first, until they learn that changing the rules is ***part*** of

the game) or making sure there is no winner or loser for kids who have trouble with a "winner". Play games that can be changed to avoid the my turn-your turn format. "It's about having fun together", Dr. Schwartz says, and she finds that parents like using these techniques because they're more fun to do than ABA trials, and it connects them to their child.

Although RDI is touted as parent model, schools must support it if it is being used at home (see page). "Otherwise," Dr. Schwartz warns, "it will undo what is taught at home; they need to reinforce it." Schools can also use RDI strategies to achieve specific goals in flexible thinking, declarative language, social referencing, etc. Referencing your face and following your eye gaze, for example, are things that can easily be reinforced at school. Paras can be trained in ways to do it, and she finds that they generally like using them – it's ***fun*** for them as well as the child, and it establishes a better relationship between them. School staff can start by getting the video and accessing the website (www.rdiconnect.com) for some simple ideas.

RDI and ABA

Unfortunately, Dr. Schwartz says, one of the reasons Applied Behavior Analysis (ABA) has worked well for so many kids is because it focuses on building up the procedural system, which is the child's strength to begin with. They develop their skills through the use of memorization and drills, but the most common criticism of ABA is that the skills are not generalized – the kids with ASD become dependent upon prompts and scripts. Their conversations are pieces of memorized scripts, rigid turn taking, and questions and answers, but they're not really functional – these are splinter conversation rules, but there are no rules that apply to all conversations. In natural conversations, people need to make changes in their statements based upon context, nuance, nonverbal cues, etc. That requires flexibility, a function of the dynamic part of the processing system. Pictures, like the Picture Exchange System (PECS) and other visual supports, work really well for kids with ASD too, but pictures are flat and static, therefore, they make sense to the procedural functions; they do not move or change. The kids don't develop strategies to deal with life, because they can't apply what they learned by rote in a non-rote world. Kids with ASD have so much trouble with generalization because changing the learned skills to apply them in other situations requires processing information dynamically. Generalization is, therefore, only going to occur through strengthening the dynamic system, it cannot be accomplished through a procedural system. Dr. Schwartz says that if someone had a weak side of their body (due to a stroke, for example), doctors would advise building up that side with physical therapy. You can't achieve balance by working on the strong side, but that is what we try to do with ABA programs in isolation. Both ABA and RDI have their uses and teach different things, so it's not necessary to choose one method over the other - you can do both simultaneously. She says that, there are certainly some skills that can be taught using rote ABA-like methods; labels, work habits, and behavioral control for instance, so there are many kids who benefit from behavioral programs. But, she adds, we should not choose behavioral methods over teaching faces and relatedness; we need to balance them by working on the dynamic system as well as the procedural.

The kids need to be able to use the language skills that are drilled in a variety of situations, but if you look at most ABA programs, she says, conversations consist of one question after another. You can get as many as 98% of conversational input in the form of questions, and then, she adds, we wonder why kids with ASD are perseveratively asking questions. If the child doesn't initiate until he is asked a question, if he/she has only learned question-response skills, then he/she hasn't mastered conversation. We must also look at the ability to use declarative language - commenting, using excited statements, sharing opinions or thoughts, etc. These are also essential language skills to be able to converse with people, because typical people do not use a question-answer format when interacting with each other. The kids need to be exposed to declarative language, because as part of the dynamic system, it will encourage social referencing skills. Families and school staff can easily get used to using phrases like, "lets show it to Dad", "I feel like eating pizza", "I don't like that TV

show very much", and "this is a good book". If the kids are simply taught the rule that conversation means taking turns saying things (you say something, I say something, you say something back, I add something….), they don't get the meaning behind the interaction (sharing thoughts and feelings with another person), instead they are concentrating on the procedural turn-taking element.

In addition, ABA has 1 or 2 'looking' goals, which focus mainly on the premise: *if you look, you get a reinforcer (reward)*. Most of the time, you see the therapist saying things like, "look at me", or "nice looking". This again, focuses on using the procedural system. In RDI, there are 37 objectives that address looking, but not one of them involves anyone saying the word "look" to the child. But, without those 37, she says, they can't do the later skills.

Research

Steven Gutstein, who is the developer of the RDI method, conducted the only current research that exists about the efficacy of RDI. However, this research, Dr. Schwartz says, is stronger than the original research done by Ivar Lovaas, who developed current ABA practices. Dr. Lovaas' own original research is still being used today to support the success of ABA. The results of Dr. Gutstein's research can be read in the April issue of *Autism Spectrum Quarterly*, and will also appear in the *Journal of Autism and Pervasive Developmental Disorders* soon (no date has been released yet), which is a publication for professionals in the field of autism. Dr. Gutstein's study consisted of 31 subjects. 17 of those subjects went without RDI, 14 received RDI over a period of 16 months. 70% of the children receiving RDI improved their scores on the Autism Diagnostic Observation Scale (ADOS), and placement in regular education settings went from 12% to 82%, while there was no improvement in the ADOS scores or changed educational placements for the children who went without RDI. They have since found that kids were most successful when parents learned to incorporate RDI techniques into the family's daily lifestyle, though this was not part of the original study. The family component has now been fully incorporated into the RDI program.

You can see more of Dr. Gutstein's research article as well as activities, and information on certification in RDI on his website, www.rdiconnect.com.

Thank you Dr. Schwartz, as always you are a wealth of information, and we are lucky to have you here in Connecticut!

Letter from Steven Gutstein, Ph.D. (Developer of RDI)

I am writing to clarify my position concerning the use of Relational Development Intervention as part of the school day. I believe that inclusion of RDI principles in the classroom day is essential to facilitate progress in students whose parents are already conducting RDI in the home. If RDI principles are not implemented by school personnel we run the serious risk of the school unwittingly undoing all the progress that parents make. By RDI principles I am not referring to specific activities out of the RDI activity books. Rather I am referring to the basic principles of RDI outlined below:

Principles for Implementing RDI in School Settings

- Develop a Master-Apprentice relationship between teacher and student
- Increase the emotional investment in lessons
- Increase students' feelings of competence by having them participate in the solution of real problems
- Provide challenging but appropriate roles so that they obtain a gradual perception of mastery

- Provide students with the affordance of observing the attitudes and strategies of safe, masterful models
- Emphasize active engagement and thinking rather than passive “absorbing” of information
- Emphasize declarative communication for mental engagement
- Use “spotlighting” to distinguish meaningful information
- Provide lesson preview periods to aid the child’s focus on what is most important in an upcoming lesson
- Conduct lesson reflection periods, customized to each student’s ability and means of reflecting, to determine what the child has retained
- Emphasize episodic memory encoding
- Eliminate direct prompts
- Emphasize students’ learning to reference their environment and teacher
- Initially eliminate environmental distractions and then gradually re-introduce them
- Maintain regularity through routines, but emphasize variation
- Emphasize active thinking over content acquisition
- Emphasize quality over quantity of learning
- Do not require peer collaboration until students are ready
- Make sure students treat each other with courtesy and respect
- Don’t ask other students to take responsibility for making encounters successful
- Develop plans for gradually fading out compensation services as remediation is successful

RDI Curriculum Guidelines

- The curriculum should strike a dynamic balance between acquisition and mental engagement. Accumulating knowledge should not be valued or rewarded for its own sake
- Reading should be taught as an active, extractive, appraising, translating and integrating process
- Writing should be taught as the expression of meaningful knowledge or thought-provoking stimuli that can effectively be used by the intended audience (including oneself)
- Mathematics should be taught as the use of computation, estimation, measurement, and quantitative analysis for meaningful real-life problem solving
- Science should be taught as a process of learning to think like a scientist: hypothesizing, experimenting, discovering, failing, classifying, building theories, learning about dynamic interrelationships, looking at the same object or event at all levels from “micro” to “macro” understanding the development process, distinguishing between knowledge, theory and speculation
- History should emphasize the relationship of past, present, and future, how small events have resulted in huge impacts, how single individuals affect the world, how “progress” is a relative term, how we can capture the emotional impact of past events, how we learn and sometimes don’t learn from our past mistakes, how we are all connected to our past, how history is subjective, how history consists of every moment before the present.

Steven Gutstein, PhD