

On Giving ABA Away
by
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All children are different. Some children are good in math but, for others, math is quite challenging; some children are good in art, and others find art quite challenging; some children are good in music, and others couldn't carry a tune if their lives depended on it; and so on. Some children are good in language, and some find language quite challenging; some like to socialize, and some find socializing quite challenging.

Autism is a developmental disorder that is characterized by deficits in language and social interaction, and by restricted, repetitive and stereotypical patterns of behaviour, interests and activities. Children with autism don't behave the way they do because they have autism; they have been given that diagnostic label because they have a neurological condition that results in language/communication and social relating deficits (and sometimes other problems as well), and these deficits tend to isolate a person (hence the term "autism").

About thirty percent of individuals with autism have difficulty modulating their sensory and motor systems. They may be:

- Over-sensitive² or under-sensitive to visual stimulation
- Over-sensitive or under-sensitive to auditory stimulation
- Over-sensitive or under-sensitive to olfactory stimulation
- Over-sensitive or under-sensitive to taste stimulation
- Over-sensitive or under-sensitive to tactile stimulation

They may also have:

- difficulty starting, continuing, stopping, combining, and/or switching movements

and some children with autism have mental and emotional processing Issues, as shown by differences in:

- perception
- attention
- consciousness (and confusion)
- motivation
- emotional regulation – Gillingham (2000) has even suggested that this is the main problem in autism

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² Hint: They may function better if you can "tone it down" when interacting with them.

These sensory, sensorimotor and internal processing variables can make life difficult for the child, and the child's expression of these difficulties may show up as insistence on sameness, repetitive self-stimulatory behaviours ("stimming"), anxiety, depression, anger, or even a complete inability to function (i.e., system shutdown). Parents are advised to try to accommodate to these sensory and internal processing problems by modifying the environment to the extent that it is feasible, and try to enlist the help of an Occupational Therapist (an OT). Then, go ahead and raise your child as best you can.

Autism and the Role of Education in Its Treatment

Why do children with ASD have the problems that they do? Nobody knows, although there is lots of speculation. The term "Autism" is descriptive rather than explanatory. However, to the extent that language and/or social interaction aren't learned automatically, they have to be taught (if you want them to be learned).

Parents should know that there are many opportunities for teaching/learning outside of any formal instruction program which may be set up for a child, and most of that teaching has to be done by the parents. Some years ago there was a book about psychotherapy called "The Other Twenty-Three Hours." Its point was that what goes on during the rest of the day is just as important, and possibly even more important, than what goes on during the psychotherapy hour. The same principle applies to any treatment program set up for a child with autism. Regardless of how intensive it may be, there is going to be a lot of "dead time" unless the parents can learn how to promote their child's learning throughout the rest of the child's waking hours.

There are many different approaches to treating children with autism (see Evidence-Based Practices for Children and Adolescents with Autism Spectrum Disorders, 2003, available as a free download from Children's Mental Health Ontario, 416-921-2109, www.cmho.org). However, if learning occurs as a result of any of these different approaches, it will occur in keeping with "the laws of learning" (i.e., what we know about how learning works, as established by psychological researchers during the past century or so).

There are several lines of research into learning, but the three kinds of learning that have been most fully researched are:

- Classical conditioning (which was extensively studied by Pavlov and his colleagues and students)
- Operant conditioning (which was extensively studied by Skinner and his colleagues and students)
- "Social Learning Theory" (which was extensively studied by Walters and Bandura and their colleagues and students)

Classical (or Pavlovian) Conditioning

In classical conditioning, a stimulus becomes able to elicit a particular response by virtue of having been paired with a stimulus that already elicits that response. For example: Suppose your child likes milk (assuming for the moment that “like” can be defined operationally). The child will learn to like the person who provides the milk, simply by virtue of that person having been paired with the milk. This kind of learning through association – referred to as “pairing” – has a very important part to play in your child’s development.

Operant Conditioning

If some particular behaviour is followed immediately and consistently by a particular consequence, the child will learn to associate that particular consequence with that particular behaviour.

If a behavioural response to some particular antecedent event (or cue) is followed immediately and consistently by a particular consequence, the child will learn to associate that particular consequence with that behavioural response to that antecedent.

If the probability is subsequently increased that the child will give that response to that antecedent, we say that these particular consequences, which we presume the child experiences as desirable or rewarding, “reinforce” or strengthen (the probability of occurrence of) those behaviours.³

That is, the student learns to do those things that are followed by certain kinds of (reinforcing) consequences. This is known as operant conditioning – the child’s learning of the behavioural response is conditional upon its having being followed immediately⁴ by a consequence which, from the child’s point of view, is desirable or rewarding.⁵

³ Although, technically speaking, whether or not the consequence was perceived by the child as rewarding is immaterial; all that matters is that the probability of the child exhibiting that behaviour in response to that particular antecedent stimulus increases as a result of having been followed by that particular consequence.

⁴ Research has determined that, for the learning of behaviours, the optimal time between the behaviour and its reward is about half a second.

⁵ As a general rule, consequences that the child finds rewarding are likely to be good reinforcers. However, this is not always the case, and the only sure way to determine what will be reinforcing for the child is to present the consequence after the behaviour and see whether the behaviour is strengthened – remember, that is how reinforcement is defined. Nevertheless, for all practical purposes, you should reward any behaviour that you want the child to learn to do. Experience with this kind of learning has shown that you really don’t have to worry about always having to reward your child for everything that he/she does because, once the behaviour has been learned, you can and should gradually cut back on how often you specifically reward the child for each of those behaviours. In addition, most of the behaviours that you will be teaching will eventually generate their own rewards – in fact, just being able to do something new can be rewarding in itself, as the child will eventually discover for him- or herself.

It is from operant conditioning that we get the idea that “learning is as easy as A-B-C” (Antecedent, Behaviour, Consequence).

- **Antecedent Conditions** (also called the Discriminative Stimulus or S^D) – something that happens just before, and serves as a cue for, the behaviour that you want the child to learn to do (as a response to that cue/antecedent conditions).
- **Behaviour** – something that the child does (in response to that cue/antecedent conditions).
- **Consequences** – which increase the likelihood of occurrence of that behaviour when the child is presented with those antecedent conditions. (Such consequences are said to reinforce, or to be a reinforcer for, the behaviour that they follow).⁶

Learning through reinforcement has a very important part to play in your child’s development.

Social Learning Theory

The work of Bandura and Walters and their students on Social Learning Theory (beginning with Social Learning and Personality Development, 1963) included study of the role of modelling in learning, including video modelling, as a way of teaching social behaviours. The learning principle involved is learning through observation. Learning through observation has a very important part to play in your child’s development.

ABA and the Science of Teaching Children with Autism

Applied Behaviour Analysis (ABA) may be thought of as remedial education for the language/communication and social relating deficits, and treatment for the behavioural rigidities, which define autism. It makes use of each of these kinds of learning. It is one of the few approaches that research – as contrasted with anecdotal reports – has demonstrated to be helpful with this population. However, it is primarily a behavioural approach to learning. Based primarily on operant conditioning, it is concerned with observable behaviours. (Why observable behaviours? Because, if you can’t see the result of your teaching – in

⁶ In choosing potential reinforcers, look for the following characteristics:

- Items that you can control access to
- Easy to deliver
- Available for a short duration or
- Easy to remove
- Can be delivered on multiple occasions
- Always seem to be motivating

You may not find reinforcers with all of these characteristics, but you can at least try to do so.

fact, if you can't measure it – it is hard to tell whether or not anything is being learned).

Unfortunately, in their quest to demonstrate the utility of the teaching procedures that they are using, most ABA service providers have tended to focus their teaching efforts on those behaviours which are easiest to observe being learned. I will say more about that later.

While ABA relies heavily on “reinforcement” (one of the most important concepts in the teaching of behaviours), it begins with “pairing.” (Remember pairing? – from classical conditioning: when things happen at the same time, we learn to associate them with each other). But to understand the role of pairing in an ABA program, it is first necessary to know something about reinforcement and the role pairing plays in reinforcement.

Reinforcement

Reinforcement is a consequence that occurs (1) immediately⁷ (2) after⁸ some observable behaviour and (3) results in the learning of that particular behaviour. It can be the provision of something desirable, such as a piece of cookie (positive reinforcement) or the removal of something undesirable, such as the removal of some task demand (negative reinforcement). It is much harder to find appropriate negative reinforcers than it is to find appropriate positive reinforcers, so think “positive.”

Reinforcement can be either the natural consequence of a behaviour or an arbitrary or contrived consequence, i.e., one devised by the instructor. Although naturally-occurring reinforcers have a better chance of maintaining the behaviour over the long haul, most reinforcers used in ABA (except for social approval and achievement) are arbitrary. .

Fortunately, at some point in the learning process, language, social interaction and social approval/praise can become enjoyable for the child and, therefore, likely to be reinforcing in and of themselves. At that point, the instructor doesn't have to continue to be available to keep reinforcing language and social behaviours with arbitrary consequences, such as toys and edibles, in order for the child to continue to engage in them.

Arbitrary aversive consequences (such as spanking and/or yelling at the child) interfere with the learning of behaviours that you will want to teach (e.g., as a substitute for any undesirable behaviours that you want to get rid of), so don't use them! Instead, think of teaching (through modelling and reinforcement) the behaviours that you want to get.

⁷ For humans, the optimal time between behaviour and reinforcement is about half a second.

⁸ Reinforcement is not a bribe, which is given in advance of some particular desired behaviour in the hope that it will be followed by that behaviour.

Reinforcement can occur in response to every instance of a behaviour (a continuous reinforcement schedule) or less frequently (an intermittent reinforcement schedule). Moving from a continuous reinforcement schedule to an intermittent one is known as “thinning the reinforcement schedule.”

Behaviour that is maintained through intermittent reinforcement is less susceptible to extinction (i.e., being forgotten/dying out when the reinforcement stops coming regularly) than behaviour that has received only continuous reinforcement. Therefore, “thin the reinforcement schedule” – gradually move from reinforcing every instance of a behaviour to only reinforcing it occasionally – as opportunity permits (but not so quickly or so much that the behaviour you are trying to teach no longer feels worth the effort to the child).

Reinforcement can be either

- (1) innate / built in / hardwired (which we refer to as primary reinforcement) or
- (2) learned (which we refer to as secondary reinforcement).

Examples of primary reinforcement include:

- Food – pieces of cookie, chips, etc.
- Drink – water, pop, juice, etc.
- For some children, sensory stimulation – cuddles, tickles, bouncing, swinging, music, etc.
- For some children, a decrease in sensory stimulation (because some children with autism, who don’t have very good sensory filters, already feel overstimulated).

Secondary reinforcers are learned reinforcers. They come to have their reinforcement value through being paired with something that is already reinforcing (either primary reinforcement or previously-learned secondary reinforcement). The learning principle involved in pairing is learning through association – an example being classical (or Pavlovian) conditioning.

Any reinforcement that has to be learned is, by definition, Secondary Reinforcement. Examples might (or might not, in your child’s case) include:

- approval
- social interaction (or even your very presence)
- toy play (other than the kind of lining up of objects, etc. that is so characteristic of children with autism)

If any of these are going to be reinforcers, their reinforcement value may have to be taught (through pairing them with other reinforcers).⁹

⁹ If you take the time to teach a “generalized” secondary reinforcer, e.g., a sound such as a “snap,” “tap,” or “click,” you will find that it can be used very unobtrusively and effectively to mark

Establishing the Reinforcement Value of Social Approval

For most children, social approval is both rewarding and reinforcing, and behaviours followed by social approval are likely to be learned. For many children with autism, however, social approval is not particularly reinforcing until after it has been paired repeatedly with more tangible reinforcers such as food or activities that the child finds rewarding (i.e., activities that are already reinforcing for the child).¹⁰ So, begin by pairing yourself and your approval with more tangible reinforcers, until your approval has reinforcement value. Then, continue to pair your approval with other reinforcers fairly regularly, so that its reinforcement value doesn't fade away. Remember, continue to pair your approval with other reinforcers fairly regularly, so that its reinforcement value doesn't fade away. Forgetting to do so is one of the commonest mistakes made by instructors of children with autism.¹¹

At the same time, expose your child to lots of language and fun things that you do together – pair yourself with lots of non-demand “narrative” language¹² and

out for the child those behaviours that you would like him or her to learn. For a fully discussion of this technique, you might refer to www.tagteach.com

¹⁰ Giggle Time: Establishing the Social Connection by Susan Aud Sonders (2003) is a good resource for teaching a beginning learner how to begin to relate socially. More Than Words by Fern Sussman (1999) and The Autistic Spectrum Parents' Daily Helper: A Workbook for You and Your Child by Abrams and Henriques (2004) are good next-step resources in parent-and-child-with-autism interaction.

¹¹ Imagine that the child has three levers he can push:

- escape/avoidance
- repetitive behaviour(s)
- participating with you in enjoyable activities within which learning can occur

Your job is to arrange conditions so that the child is motivated to push the “learning activities” lever. He/she will do that if participating with you brings him/her sufficient enjoyment/reward, compared to the effort that it requires.

¹² Also called “declarative” language, in contrast to “imperative” language. Imperative communication uses language forms that demand something specific of the child – and they imply that the instructor's point of view is the only one worth considering. Examples of imperative language are:

- directives (“Touch the car”)
- choices (“Would you like the car or the bubbles”)
- questions (“What is your name?”).

Narrative/Declarative communication uses language forms that don't make any demands on the listener. It tends to involve relative thinking processes which imply that, between two speakers, there can be different views of reality. Examples of declarative language include:

- invitations (“Let's play with cars”)
- statements (“I'm tired of playing with cars!”)
- self-narratives (“I'm walking over to the table to pick up some cars.”)

One parent writes: Instead of asking a question like: “How was school today?” (which always gets the answer: “Fine.”), I say: “I think you had gym today in school and I am wondering if it was fun ...” (and he tells me!). When I'm watching really good teachers in any classroom situation, I notice that the really good ones, the ones that involve their students in experience sharing the most, use a lot of declarative communication. The real wonderfulness of using declarative communication as much as possible is that it accesses the relative [i.e., “relative thinking”] processing centers of the brain and gets an autistic individual a chance to consider that other

non-demand social interaction – and, of course, reinforce any positive response that you get. But don't talk all of the time. There is also value in pairing yourself with comfortable silence – just quietly being together – if you can learn to use it productively.

To the extent that it is feasible, try not to pair yourself with aversive consequences (i.e., things that the child experiences as unpleasant), such as taking the child from a more reinforcing situation to a less reinforcing situation, as is likely to occur if you prevent the child's repetitive behaviours (referred to as "stimming") or take him away from playing, etc., *unless you are taking him to something that is even more rewarding/reinforcing.*

The Reinforcement Value of Consequences Changes From Time to Time: The Role of Motivating Operations (aka Establishing Operations)

You should know that the reinforcement value of any particular consequence will change from time to time. For example, a sip of pop is more likely to be reinforcing when a child is thirsty than after he/she has just had a big drink; access to a favorite videotape is likely to be more reinforcing if the child hasn't already watched it earlier in the day; etc.

Events (including those things you do) that alter the reinforcement value of a consequence are called Motivating Operations (MO's or EO's). The use of MO's can often most productively be taught (i.e., to instructors) within the context of teaching the child to make requests (manding)... because teaching your child to use language to ask for the things that he/she wants will provide lots of opportunities to think about how you can motivate him/her to ask for things.

If a child wants something, he/she will usually do something to try to get it. Your child may, for example, lead you by the hand to whatever it is that he/she wants. You can learn to use that motivation to teach your child to ask for what he/she wants. For example, you could place a favorite toy just out of reach, so that your child will be motivated to ask for your help to get it. You could give your child some ice cream and momentarily "forget" to provide him/her with a spoon, so that he/she is motivated to ask for a spoon. You could place favorite toys in transparent containers that he/she needs your help to open. And, of course, the reinforcement for asking for what he/she wants is getting what has been requested. Just how to take advantage of that motivation will be explained later.

people have a point of view that may be different from their own! And it's even a good tool to use in all of our communication with other people, wherever they fall on the spectrum.

Establishing Instructional Control

The first step in formal instruction, after beginning to engage your child in mutually-enjoyable activities, is to teach him/her to look to you for instructions (also known as “establishing instructional control.”¹³) Typically, this is a smooth extension of pairing yourself with activities that the child enjoys, as the child begins to develop memories of the fun he/she had in things that you have been doing together. Here is how it works:

To get your child to look to you for instructions, you have to give instructions, see that the child follows them, and reinforce the (following-of-instructions) behaviour. But you can’t teach this directly, since the instructions that you give always have to be specific: Any following-of-instructions that the child learns has to be a generalization he/she makes from many specific teaching/learning trials. That is, you want your child to learn to do what you tell him/her to do and, to do this, he/she has to:

- (1) do what you tell him/her to do, and
- (2) be reinforced for doing so.

That will work best if you never give instructions that you aren’t willing to enforce and reinforce. Don’t teach your child that he/she doesn’t have to do what you tell him/her to do (e.g., by allowing him/her to avoid doing what you tell him/her to do). And by the way, since you can’t enforce speech, you should not demand it of your child; you have to be willing to entice him/her to speak. How to do that will be explained later.

Teaching Models/Venues: ITT and NET

In this section, I am going to introduce you to some new language, some of which (in my opinion) is pretty close to jargon, so you will have to pay close attention. In most of the ABA literature, people referred to two common teaching models/venues used in an ABA program: Discrete Trial Teaching (DTT) and Natural Environment Teaching (NET). DTT involves the instructor and student working together at a table, using a series of discrete Antecedent-Behaviour-Consequence “teaching/learning trials.” NET (also known as “incidental teaching,” although, personally, I would prefer to reserve the term “incidental teaching” for teaching that is incidental to your stated goals), in contrast, is conducted in the child’s natural environment, wherever opportunity presents (rather than in a more formal teaching setting), making use of the child’s immediate interests and activities in that environment.¹⁴

¹³ Schramm has three excellent chapters on instructional control in his book, Educate Toward Recovery.

¹⁴ NET, as a result, is where parents can really shine!

Recently, however, some well-known service providers¹⁵ are suggesting that a better distinction would be between Intensive Trial Teaching (ITT) and Natural Environment Teaching (NET), rather than between DTT and NET, at least partly because the teaching trials in NET are also discrete, i.e., each teaching/learning trial has a beginning and an end.

In this new way of looking at things, ITT involves the instructor and student working together at a table, often using as many as 16-25 discrete Antecedent-Behaviour-Consequence “teaching/learning trials” per minute¹⁶ and (in the beginning at least) the reinforcement is most often arbitrary (in the sense of being unrelated to what is being learned), i.e., whatever consequence works to strengthen the behaviour being taught, such as a piece of cookie for learning to say “book” when shown a book and asked “What is it?”

Natural Environment Teaching (NET), in contrast, uses the same kind of discrete Antecedent-Behaviour-Consequence “teaching/ learning trials” as ITT but the reinforcement, rather than being arbitrary, is the learner’s motivation-of-the-moment. In this way of thinking about NET, “environment” does not refer to location but, rather, to the fact that the reinforcement is natural rather than arbitrary, i.e., the teaching occurs within the “environment” of natural rather than arbitrary reinforcement.¹⁷ NET still makes use of the child’s interests and activities of the moment, just as before, and interactions that involve materials and activities which are meaningful to the child, used in a reinforcing manner, continue to be the key to Natural Environment learning.

NET requires you to “think on your feet,” making use of whatever the child is interested in, or can be interested in, at the moment, to keep him or her engaged in the task of learning. Consequently, it can be a little more challenging for the instructor, but it is more fun than only working at a table; and we do like to keep things fun for both the instructor and the child. In addition, however, there is some research that suggests that “Naturalistic Language Teaching Procedures for Children at Risk for Language Delays” – incidental teaching, modelling, milieu language teaching, etc. – can be even more effective than more structure approaches in facilitating the generalization of children’s acquired language skills (Peterson, *The Behavior Analyst Today*, Vol. No. 5, Issue No. 4, 2004), and that is an extremely important component of making language actually functional for the child.¹⁸

¹⁵ Holly Kibbe and Cherish Twigg of Establishing Operations, Inc. in a recent workshop on “Teaching Verbal Behavior in the Natural Environment.”

¹⁶ Hence the “intensive” part of ITT.

¹⁷ This is my interpretation of what is currently being taught by Holly Kibbe and Cherish Twigg (www.establishingoperationsinc.com) in their workshop on teaching verbal behaviour in the NET.

¹⁸ “Intensive Behavioural Intervention: A Workshop for Parents of Young Children with Autism,” prepared by Behaviour Institute (Hamilton and Toronto) for the Integrated Services for Children Division of the Ontario Ministry of Community and Social Services when Ontario was developing its IBI program discussed the range of behavioural interventions found within this approach, including Discrete Trail Teaching (DTT, in which an antecedent-response-consequence cycle

Establishing Operations Inc. is advocating ITT or NET based on whether the learner is a beginner, an intermediate learner, or an advanced learner – ***it is recommended that NET be the main teaching model for both beginning and advanced learners (where engagement is crucial to program goals) and that ITT be the main teaching model for intermediate learners (where intermediate language-acquisition goals are prominent)***. Of course, it is important to remember that all children are different and that what works well for one child may not work as well for another and that, while a particular approach may work very well at one point in a child's program, it may not work as well later on. One of the main advantages to ABA is that it is data driven, and ABA programs are adjusted as needed to ensure the child's continuing progress. As noted in the Behaviour Institute's IBI workshop for parents: "One of the fundamental characteristics of applied behaviour analysis is its emphasis on direct and frequent measurement of children's performance as the main basis for making decisions about the child's program." I would add that the data not only needs to be collected, it needs to be graphed as well, so that the effectiveness of the teaching can be seen at a glance.

Reinforcement and Shaping

In addition to pairing, the three main issues to be addressed in teaching children are (in my opinion):

Reinforcement

Shaping

Having a very detailed list of the small steps that have to be taught in each area of the child's life

We have already talked a bit about reinforcement, which brings us to shaping. Shaping refers to accepting (for the sake of having a chance to provide the child

comprises a trial, or learning opportunity for the child) and Incidental or Natural Environment Teaching (NET, which is teaching that occurs throughout the natural environment, i.e., wherever the child happens to be).

With respect to the latter, it was noted that:

"Early behavioural approaches to teaching language have tended to see language development in children with autism as a behaviour needing to be taught under tightly controlled environmental conditions, free from distraction. Language instruction tended to be provided in a discrete trial teaching format.... Teaching would be done on a one-to-one basis with seating arrangements and the choice of stimuli being decided by the teacher. There were a number of problems in child outcomes found to be associated with discrete trial teaching of language skills. Gains were slow to occur (Lovaas, 1977). When gains were obtained, they were minimal and associated with failure of the child to generalize spontaneous language outside of the training situation. Finally, teaching language in a discrete trial format was frequently associated with problem behaviours from the child (Koegel, 1996)." (p. 7.2).

Thus, language acquisition is now taught through a combination of formats including both DTT – it is now being suggested that this be referred to as ITT – and NET, as appropriate to the task, i.e., some things are best taught in one setting and some in another.

with reinforcement) any approximation of the behaviour that you wish the child to learn, and then very gradually “raising the bar” – reinforcing each small incremental step that will eventually lead to the child accurately producing the behaviour that you want him/her to learn.

Shaping is not something new – we do it all the time when teaching beginning learners. For example, we don’t expect toddlers to have perfect enunciation before we start providing them with approval for their attempts to talk. We accept what they can produce, and only then do we start to raise our expectations, a little bit at a time. Shaping allows the child to be rewarded for his/her efforts, even if what he/she is able to produce is less than perfect, and that helps to keep him/her motivated to keep trying.¹⁹

Determining What Your Child Needs to Learn

There are many curricula that will provide you with information about what needs to be taught. Most ABA-based programs are focused on teaching the intermediate learner, using the Assessment of Basic Language and Learning Skills - Revised (ABLLS-R) as the basis for their assessment of what the child already knows,²⁰ and the “Verbal Behaviour” approach to teaching. Although that is not always the best place to start, I want to introduce you to both of these before retracing my steps to discuss what to do with beginning and advanced learners.

The Verbal Behaviour Approach to Applied Behaviour Analysis

Applied Behaviour Analysis (ABA) is a complex endeavour, being based on decades of psychological research into learning.²¹ However, its basic principles

¹⁹ In fact, it has recently been suggested that we should always be thinking about shaping whenever there is a response which is less than perfect – that it may be more productive to stop thinking of responses as being either “right” or “wrong,” and to begin thinking of them as either “right” or “in-need-of-shaping-into-the-correct-response.” Admittedly, this may be more sophisticated than most people are ready to implement at their current stage in learning about ABA, but it is something which could at least be kept in mind for future consideration.

²⁰ While the ABLLS-R is a good beginning curriculum, it is better as a guide to developing language than as a guide to developing social skills. For the latter, you may want to supplement it with material from references such Social Skills Solutions: A Hands On Manual for Teaching Social Skills to Children with Autism by Kelly McKinnon and Janis Krempa (2002) or from sources such as Greenspan and Gutstein, to be discussed later. In addition, if your child is already of school age, you should evaluate his/her current achievement against the curriculum for each of the grades leading up to and including the grade in which he/she is currently enrolled.

²¹ ABA has been defined as “the science in which procedures derived from the principles of behavior are systematically applied to improve socially significant behavior to a meaningful degree and to demonstrate experimentally that the procedures employed were responsible for the improvement in behavior.” For an excellent introduction to teaching children with autism using the principles of ABA, see Schramm, R. (2006), Educate Toward Recovery – If I were only able to recommend one book for someone who really wants to be a good instructor/therapist, this might be it, particularly for its chapters on instructional control, teaching a child who insists on being in control, and the relationship between ABA and RDI.

are relatively simple and can be mastered without the necessity of extensive training. Essentially, ABA requires that we:

- Determine what the child already knows.
- Break the material to be learned into relatively small steps.
- Starting where the child is, teach²² the next steps in each part of the curriculum.
- Track the change – data collection is an important part of ABA
- Modify your procedures and teaching targets as necessary to ensure continuing progress.

If a program has these characteristics, it is an ABA program. Within these parameters, however, there is still considerable variation in just how this teaching is accomplished. Recently, however, many services providers have adopted an approach, sometimes referred to as ABA/VB (VB standing for Verbal Behaviour) that emphasizes teaching each of the components of language described in B.F. Skinner's book, Verbal Behavior (since one of the main deficits defining autism is an underdevelopment of language).²³

Skinner's Analysis of Language from a Functional Perspective

Most people think of language²⁴ as being either:

Receptive = understanding what someone else says

Expressive = being able to use language to make yourself understood

Some time ago, however, B.F. Skinner (1947) analysed language into its functional components (i.e., breaking it down into its uses). Here are a few examples:

Repeating something that has been seen or heard (Motor Imitation and Echoics)

Receptive identification of objects (Receptive ID)

Demanding/requesting (Mands)

²² And don't forget that the actual learning occurs as a result of your reinforcement of – essentially, rewarding the child for producing – the behaviours that you want the child to learn.

²³ My two favorite ABA/VB books are:

The Verbal Behavior Approach: How to Teach Children with Autism and related Disorders by Mary Lynch Barbera (2007) – a goldmine of ABA experience in a relatively small and easy to read book. An excellent book for parents and therapists alike, and a very good place to start.

Educate Toward Recovery: A Teaching Manual for the Verbal Behavior Approach to ABA by Robert Schramm (2006)

For more information on Verbal Behaviour, there is a recently developed "wiki" at <http://verbalbehavior.pbwiki.com/>

²⁴ And remember that language can be vocal (i.e., spoken words) or non-vocal (i.e., picture exchange, signing, computer, etc.)

Contacting or labelling (Tacts)

The language used to talk about something in its absence, such as
 “What colour is a fire truck?” The child responds, “Red!”
 (Intraverbals)

As it turns out, teaching language from a functional perspective has proven to be very productive.

Demanding/Requesting (Mands)

Typically, language proceeds from imitation through manding to labelling and intraverbals. A typical preschool child will make 500-1000 mands per day. Manding is usually taught before labelling because the reinforcer is built-in – the child is motivated to ask for things and reinforced by getting them. Manding is usually taught in the child’s natural environment. When teaching manding, think “motivation.” How are you going to arrange things so that your child is motivated to mand?

At first, teach words that either request (mand) or label (tact) reinforcers, e.g., particular foods or drinks, a particular toy, etc. And never teach only one mand at a time. Have several in acquisition at any given time. If teaching signing to a child that has poor motor imitation, initially have no more than 5-8 signs in acquisition at a time; if the child has moderate motor imitation, you can begin teaching up to 20 signs at a time.

Always say (or, if you are teaching signing, sign and say) the name of the item three times as you deliver it, unless the child says (or signs) the word before you finish, in which case, deliver the item immediately.

In the beginning, don’t try to teach words that look alike or sound alike. For example, the sign for eat and drink look very similar, the words eat and meat sound alike – you want to make it as easy as you can for your child to learn to communicate. And avoid teaching “general” words like “more,” which can cause you immense problems when the child starts to use them indiscriminately.

■ From an e-mail discussion group:

“I use every single thing in [my son’s] life to get him to mand. We have to do at least a thousand mands a day though I have never actually counted them. Example of part of his day:

He asks for milk and I tell him he first has to pick out the pants he wants to wear (I usually try to get him to do something else before getting the reinforcer, in this case it is the milk. This delays the reinforcer. He knows from this routine that he has to do something else before getting to the reinforcer.)”

“This works well with him since he is easy to make deals with). I ask him what color he wants. “What are you doing?” “...putting my pants on.” Then I ask, “Now what do you want?” He then tells me, “I want milk please mama.” Then I ask him what we put the milk in...cup... Where is the milk?...refrigerator... What do we put the milk in?...cup... What color is the cup? blue.... What am I doing?...pouring the milk..... What is in the cup?...milk... What color is the milk....white.... What are you going to do with the milk?...drink the milk.”

Kelly Wiggins Bauer

Receptive & Expressive Language by Feature, Function & Class

Receptive Language : “Touch cow.”

Receptive Language by Feature, Function and Class: “Show me the one that says, ‘Moo’ ” “Point to the one that gives us milk?” “Which one is an animal?”

Expressive Language by Feature, Function and Class (i.e., expecting a verbal response): “What does a cow say?” (‘Moo’) “Which one gives us milk?” (‘a cow’) “And a cow is an...?” (‘animal’)

Intraverbals

Intraverbals involve the ability to answer questions about something not present. Intraverbals play a major role in social interactions, usually in the form of answers to questions such as “How are you?” and “What did you do today?” The child’s use of intraverbals grows out of being taught all the many associations of a word, including the named item’s features, functions, and the broader class to which it belongs.

Once a child is able to identify and/or describe an object by its features, functions, and class while the object is present, intraverbals are taught by teaching the same responses with the object absent (usually immediately afterwards). It is intraverbals that take language beyond rote learning and make it really useful.

Teaching Strategies Associated with the Verbal Behaviour Approach to ABA

The Verbal Behaviour approach to teaching language uses the following simple teaching strategies:

- Always try to start and end your interaction with your child on a high note.
- Use “Most-to-Least” prompting.
- Provide a “Transfer Trial” – a transfer trial is an opportunity, provided after a prompted response, for the child to respond without being prompted.
- Mix easy and difficult tasks
- Mix/vary targets and tasks.

- Teach to fluency.
- Ensure generalization of the skills being learned.

Always Try To Start and End Your Interaction With Your Child on a High Note

Always start each teaching session by pairing yourself with reinforcement, then gradually fade in the number of demands and, starting with easy tasks, gradually work your way up to more difficult tasks. Whenever possible, deal with any problem behaviours that show up to interfere with the child's learning by ignoring them and by providing reinforcement for positive behaviours that can compete with them.

Most-to-Least Prompting ("Errorless Learning")

Most-to-Least Prompting, also known as "Errorless Teaching/Learning," refers to the ready use of prompting to ensure the child's success. One way to try to ensure that the child gives the correct response is to model the response that you want to get. Another way to prompt is to guide him/her through the behaviour, providing only as much help as he/she needs to be able to respond correctly.

Prompting is not always needed. However, if it is needed in order for the child to be successful on a particular teaching/learning trial (so that you can reinforce the particular behaviour that you are trying to teach), then the time between antecedent and prompt should usually be no more than two or three seconds. And remember that prompts need to be removed from the antecedent-behaviour-consequence sequence (i.e., "faded") as quickly as possible – this is illustrated below – so that the child doesn't become "prompt dependent."

Types of Prompts

Modelling
 Full hand-over-hand prompt
 Partial physical prompt
 Gestural prompt
 Verbal prompt
 Visual prompt
 Positional prompt
 etc., etc.

Most-to-Least Prompting: A Verbal Example

Teacher: Showing a cookie or a picture of a cookie, says "What is it?"
 immediately says, "Cookie." (modeling the correct response, using a verbal prompt)
 Child: "Cookie."

Teacher: "Right, it's a cookie. What is it?" (no prompt – a "transfer trial")

Child: "Cookie."

Teacher immediately reinforces the correct response while saying, "That's right, it's a cookie."

Most-to-Least Prompting: A Verbal Example Using Signing

Teacher: Showing a cookie or a picture of a cookie, says "What is it?" immediately signs and says, "Cookie." (modeling the correct response, using the sign and vocalization for cookie)

Child: Sign for "Cookie."

Teacher: "That's right, it's a cookie (signing and saying "cookie"). What is it?" (no prompt – a "transfer trial")

Child: Sign for "Cookie."

Teacher immediately reinforces the correct response while signing and saying "cookie."

Most-to-Least Prompting: An Action Example

Teacher: "Show me brushing."

Child: Child is assisted in brushing, by the teacher taking the child's hand and, using a hand-over-hand prompt, having the child brush his/her hair. Teacher: "That's right, you are brushing."

Teacher: "Show me brushing."

Child: Child brushes his/her hair (with only as much help as needed to get it right).

Teacher immediately reinforces the correct response, and even more so if unprompted.

Most-to-Least Prompting ("Errorless Learning") and the Transfer Trial

Typically, a "transfer trial" would follow each prompted trial. This involves giving the child an opportunity to respond (and for the response to be reinforced)²⁵ without being prompted, or with less of a prompt. You use the transfer trial to fade the prompt as quickly as possible so that the behaviour being taught does not become prompt-dependent. Most-to-Least Prompting (and the "transfer trial" which should follow each prompted trial) works very well and should be used with almost everything that you are trying to teach your child to do. The only general exception occurs when you reach the stage where it might actually benefit your child to experience some frustration – and that is not likely to be soon!

²⁵ It is hard for me (and others, I presume) to talk about reinforcement correctly. I always want to talk about reinforcing the child for a particular behaviour – in fact, that kind of imprecision may even have crept into this supposedly scholarly paper. To be correct, however, it is the child's behaviour that we reinforce, not the child.

Mixing Easy and Difficult Tasks/Targets

One way to keep the value of working with you higher than either escape/avoidance or repetitive behaviour(s) is to have about four already-learned/easy teaching targets for every being-learned/more difficult target – and be sure to reinforce both effort and success. The point is to see that the child is receiving sufficient reinforcement²⁶ that he enjoys the experience and remains motivated to keep trying to learn. By the same token, the language that you use with your child should be about 80% declarative (i.e., narrative) to about 20% imperative. That is, no more than about 20% of your communications should be placing demands on your child. That might creep up a bit when doing instruction but, in that case, it has to be balanced with sufficient reinforcement to keep the learning enjoyable. The rest of your talking to him/her should be just for sharing information and enjoyment.

Mixing/Varying Targets and Tasks

This means switching among different kinds of tasks: motor imitation, echoics, requests/demands (mands), labels (tacts), intraverbals, and so on; and switching between tasks that require verbal communication and those that require nonverbal communication. Mixing/varying targets and tasks helps to reduce boredom and keep the child attentive.

Teaching to Fluency:²⁷

“Fluency is second nature knowledge, near-automatic performance, the ability to perform without hesitation. In short, fluency is true mastery.” -- Carl Binder, 1998

Teaching to fluency involves taking an existing skill and increasing both its speed and accuracy to the point where it is actually useful to the child. That is, children need to be able to respond not only accurately, but quickly as well, since very few behaviors are truly functional when they occur with a long delay after the antecedent. For example, a child may be able to tell someone his name, but if he is not able to do so quickly – say he answers 10 seconds after being asked – he will have already lost the attention of the person asking, and that name-answering skill isn't going to help his social success. The goal of fluency training for this child would be to increase his rate of performance of telling people his name until it became fast and accurate and therefore meaningful for the child within his social context.

²⁶ Of course, once your child gets “on a roll” – on a learning roll, that is – the achievement itself will provide much of the needed reinforcement; and I have seen children respond (more-or-less correctly) to dozens of task demands with no other reinforcement than the enjoyment that they get from demonstrating their accomplishments, even when the teacher's approval is more implicit than explicit.

²⁷ This section on fluency is based in part on material on www.autismteachingtools.com. For more information about Fluency and Precision Teaching, check out the [Fluency/Precision Teaching Links](#) on that website.

Two More Effective Teaching Techniques That You Should Be Aware Of

When parents are first teaching their children to speak, they begin by using language in the child's presence. Then they start to label objects in the environment for the child. They and their child see a bus and they say, "bus." They and their child see a truck and they say, "truck." What they teaching their child, through this kind of pairing, is to associate the object with its label.

If they are fortunate and the child attempts to repeat the label after them – that is, if the child is echoic – they acknowledge the attempt, usually by either (1) repeating the child's vocalization or (2) providing the correct vocalization. For example, the parent sees a squirrel and draws it to the child's attention by pointing at it and saying, "Oh, look! A squirrel." Often, after many such pairings, the child may attempt the word, and the attempt may be something like, "keo." That is when immediate reinforcement becomes crucial, usually with something like an enthusiastic, "Yes, it's a squirrel." Or the child may label (tact) a cat by saying "meow meow," and you respond with an enthusiastic "meow meow" or "Yes, the kitty says 'Meow, meow.'"²⁸

This process is repeated and repeated and repeated until the child acquires, first, a repertoire of associations between objects and their labels and, second (if you are fortunate enough to have a child who will attempt the word), a vocal repertoire consisting of labels for those objects.

Similarly, a beginning learner may ask for a drink by saying "Wa," and the parent acknowledges the effort by saying something like, "Water" (which models the correct response) and providing the drink of water, thereby reinforcing the child's request (with the water), pairing him- or herself with the reinforcement, and possibly even socially reinforcing the child's efforts to communicate.²⁹

Of course, your child's beginning attempts to use language to ask for things is not likely to be very precise. Any attempt to vocalize or sign, however, gives you a place to start, and you can always shape up that response over time. And remember, whatever you are working on, don't forget to encourage any language and/or social interaction that your child gives you.

When working on shaping, you want to have the behaviour that you are teaching sufficiently well established that it doesn't have to be reinforced every time it occurs before you raise the requirements for its being reinforced. Then, you want to raise your criteria for reinforcement in small enough steps that the child always has a fairly good chance of that behaviour being reinforced on any

²⁸ Remembering that having a label for an object is more important than having the correct label for that object. Later on, you can teach the correct label.

²⁹ And, of course, tangible reinforcement can always be used in the beginning if that works better for a particular child.

particular attempt. Remember, reinforcement is one of the most important keys to learning.

Don't complicate the learning task unnecessarily by requiring a change (i.e., improvement) in more than one aspect of the behaviour at a time. And try not to correct mistakes from the antecedent side of the antecedent-behaviour-consequence sequence. You should think Reinforcement before thinking Antecedent; and try to let the child learn, from his/her own experience, which behaviours get reinforced and which don't. This seems to be very hard for parents to do! And try not to correct the child's mistakes (e.g., misbehaviours) by using aversive consequences; learning goes faster without aversives.

If you miscalculate and the child's behaviour deteriorates, drop back to an easier stage in the process, and work your way up again. Then, when the behaviour has been shaped up to your satisfaction, build it into the child's everyday repertoire, continuing to reinforce it from time to time until it becomes reinforced by the environment's naturally occurring consequences.

And Don't Forget About Generalization

Generalization refers to ensuring that learned behaviours are available to the child in a variety of settings, i.e., that things learned in one setting are not limited to that setting. For example, once the child begins learning to say "Cookie" when shown a cookie (or a picture of a cookie) by one instructor, it is important that he learn to do so when asked by a different person, in a different place, with a different kind of cookie, etc. Since generalization won't necessarily happen automatically, you should count on having to use multiple instructors, in different settings, etc.

At one time, generalization was thought of as a task separate from the initial teaching, something added on that could be done later. Now it is thought of as something which ought to be built into all of your teaching. The need for generalization is one of the reasons that the parents have to be involved in their child's ongoing teaching/learning.

Now, Let's Talk A Bit More About Undesirable Behaviours

Children who have trouble learning language tend to learn other, often undesirable, behaviours instead. These undesirable behaviours usually persist because the child is intermittently rewarded (i.e., rewarded once in a while) for them, but sometimes because the child is intermittently punished³⁰ for them.

³⁰ Perhaps that is why punishment usually doesn't work the way we want it to – if punishment is going to be used at all (and you should avoid using it, if possible), it is the behaviour that needs to be punished, not the child; and that requires considerable expertise.

Dangerous behaviours need to be prevented. Other undesirable behaviours should be ignored if possible, because they are often being strengthened by the attention that they receive – but you have to be entirely consistent, otherwise you find yourself intermittently encouraging the behaviour that you don't want to get. Behaviours that are consistently ignored tend to die out (also known as “extinction”), whereas behaviours that are intermittently reinforced become very resistant to extinction.

One of the best ways to get rid of undesirable behaviours is to teach (and reward the child for) desirable behaviours that are incompatible with them, e.g., language, compliance, waiting, frustration tolerance, transitions, and so on. Increasing the overall amount of reinforcement in the child's life also helps to eliminate undesirable behaviours, although you still have to be entirely consistent in not rewarding (or punishing) the child for those undesirable behaviours.

Of course, if undesirable behaviours are sensory-sensitivity-related, you will want to take that into account. That is, the child's undesirable behaviours may be being maintained by either hypo- or hyper-sensitivity-related reinforcement (such as escape from over-stimulation), and you may want to accommodate to your child's sensory needs as best you can before starting to think in terms of other options.

A couple of final points on behavioural issues:

- First, don't forget about “shaping” – you can always reinforce any movement in the direction of the kind of behaviour that you want the child to learn.
- Second, remember that undesirable behaviours usually serve a purpose for the child, and understanding that purpose is often the key to eliminating the behaviour. This may require what is called a “functional analysis” of the child's undesirable behaviours.

Functional Analysis of Behaviour

A functional analysis of the child's behaviour consists of information-gathering that results in a hypothesis about the function(s) that the behavior is serving for the child. It starts with observation of the circumstances in which the problem behaviour occurs, to try to identify the antecedents (i.e., the setting, the cues or triggers, the circumstances) and consequences (i.e., the reinforcers) that are maintaining the behavior. These reinforcers are likely to be one or more of the following:

- Attention
- Escape or avoidance of some task(s)
- Escape or avoidance of some social situation
- Access to a preferred item or desired activity
- The sensory stimulation provided by repetitive behaviours.

This information then serves as the basis for developing a plan of action that modifies environmental factors and/or consequences while providing instruction in (and reinforcement for) new, more appropriate behaviors. Throughout this process, data is collected and evaluated, and ongoing revisions are made to your plan of action (your “Behaviour Intervention Plan”) based upon analysis of this data.

Augmentative Communication Systems

Both signing and PECS (Picture Exchange Communication System) provide a way to communicate that doesn’t require the ability to vocalize. They are not mutually exclusive! Both have been used as stepping stones to speech, i.e., many children begin with PECS or signing and end up by talking. Whatever communication system you use, always reinforce any speech that you get, since speech is such a superior way of communicating. ☺

Teaching to the Child’s Preferred Sensory Modality

Many children with autism are visual learners, e.g., they can follow directions presented in picture form when they can’t follow spoken instructions, or they learn best through watching. Some, however, are auditory learners – they need to hear it before it makes any sense to them. Some need to do to learn, i.e., they are kinesthetic learners. Try to take advantage of that in your day-to-day teaching.

Chaining

Some behaviours, such as using the toilet, require that a number of steps be learned (Determining these steps is called doing a task analysis). Then you “chain” these steps together. One way to do this is to teach the first step in the procedure first, helping the child with all of the other steps in the process. Then, when that first step has been mastered, teach the second step, and so on. This is known as forward chaining.

Another way to teach these steps is to teach the last step in the procedure first, helping the child with all of the other steps in the process. Then, when that last step has been mastered, teach the second last step, and so on. This is known as backward chaining. Backward chaining is good when reinforcement comes at the end of a series of steps, as in many self-help skills. With backward chaining, the child may learn the intermediate steps before you even get to teach them, if you get lucky. Many skills, however, do not lend themselves to backward chaining. For example, you can’t easily learn to ride a bike by learning the dismount first. In such cases, consider using forward chaining if chaining is needed.

More on Determining What Your Child Needs to Learn and How to Teach It

The ABLLS-R curriculum contains many, but certainly not all, of the tasks that most preschoolers master by time they reach Grade one. The two areas in which it is least comprehensive are (1) nonverbal communication and (2) social relationship skills. In everyday interaction, nonverbal communication carries about 55% of the information being conveyed; consequently, it is an essential part of successful social interaction – and it is not a component of verbal behavior!³¹ In addition to the social skills resources previously mentioned, both Solomon's The Play Project and Gutstein's The RDI Book for further excellent information about developing social relationship skills.

In Educate Toward Recovery, which I tend to think of as “the ABA Bible,” Schramm observes that:

"In the best ABA/VB Programs approximately 75% of every interaction you have with your child should be reserved for the process of pairing yourself with fun activities and known reinforcement. Pairing activities should be led by your child's motivation and should include only non-verbal and declarative language.³² "The problem with pairing as a concept in ABA/VB is that it is not well defined. ***Pairing is a process of playing with your child.*** [Bold italics added for emphasis. RMR] Thus, making his daily experience more enjoyable when he is with you than when he is without you." (p. 267).

"To pair yourself with reinforcement, follow your child's interests and offer him access to play with anything he is interested in as long as you are allowed to play along with him. Make his playtime more fun because *you* are a part of it." (p. 46).

"It is during the 75% of time spent pairing with a child, that you are purposely not eliciting, prompting, or reinforcing responses. It is only during this pairing time that the child is allowed to make the necessary choices to explore the joy of others and spontaneously share of feelings of his own.³³ Similar to the

³¹ Well, technically speaking, Verbal Behaviour is defined as “Any behaviour that is specifically reinforced by another person.” (Schramm, ABA/VB Terms in Plain English, in Educate Toward Recovery). However, that is only a useful definition insofar as it is a reminder that nonverbal behaviour can be taught; and, in practice, most ABA-based programs tend to neglect the teaching of nonverbal behaviour.

³² ***Declarative language*** is language that asks for nothing of your child. It only serves to share your thoughts and feelings. This is important language for your child to learn and should be modeled to your child throughout your interactions." (p. 46). "You should only be using imperative language during the 25% of your interaction with your child in which you are not engaged in pairing. ***Imperative Language*** is any form of language that expects something in return." (p. 48).

³³ Although, at another point, Schramm does say: “Start by pairing with your child. This means getting involved in some fun reinforcing activity in which he wants your participation. In the beginning, avoid directions or S^Ds. Your goal is strictly to get him laughing and enjoying being with you. ... Begin to incorporate a few small and easy S^Ds into the play. Make them things that your child is most likely to do without thinking.

beliefs of RDI,TM I feel that the way to teach social experience sharing and a desire for social relationships is in large part through the 75% of teaching time that we are simply pairing with a child." (p. 268).

Regarding the relationship between pairing and teaching, Mary Barbera (The Verbal Behavior Approach, 2007) notes that the child should not be able to notice the transition from nothing-but-pairing to the situation in which something is being asked of him/her. Demands should be increased very gradually and should never make up more than a small part of the instructional program – as Schramm says, *even when an instructional program is well established, 75% of your interactions with your child should still consist of pairing yourself with reinforcement, and instruction (which so often places specific demands on the child, i.e., for correct answers) should make up no more than 25% of your interactions with him or her.*³⁴ He reports that, when one of his instructors and/or parents strays very far from this 75:25 ratio, teaching tends to become more of a negative experience for the child than a positive one, more a case of “If you work hard for me, I will give you a break from instruction” rather than something that the child can’t wait to seek out; and this has been my experience as well.³⁵

Stanley Greenspan and the Floortime Approach

Stanley Greenspan was interested in helping the child establish social/emotional relationships. He posited six functional developmental levels:

1. Shared attention and attachment
2. Engagement
3. Two way communication
4. Complex two-way communication
5. Shared meanings and symbolic play
6. Emotional thinking

Many times, skills that you know your child has recently mastered work well here. Be sure to reward those responses appropriately with more and better play." (p. 194).

³⁴ Suppose that you will be working with a child for two hours. Do not spend the first hour and a half pairing yourself with reinforcement and the final half hour providing instruction. Once you do begin to insert more formal teaching into your child’s program, any such teaching activities are to interlaced – little bits of instruction inserted into your playtime so that, as Barbera says, “the child does not really know that he is working.” Of course, all children are different, and the occasional child will let you know in no uncertain terms that he/she wants to work. I know of one child that behaves like a sponge – he just want to learn everything that you can teach him – but that is more the exception than the rule.

³⁵ And note that the child does not have to be high functioning to be eager to participate in ABA-based instruction. I have seen a child who could do little more than correctly place the remaining piece of a simple six piece puzzle (when the other five pieces had already been put in place) dragging her mother into the work area because she couldn’t wait to get started on her morning’s instruction! Obviously, she was getting a lot of satisfaction from her efforts (and probably partly from the achievement itself).

and he proposed to help the child negotiate these six developmental levels through play, starting with activities at the child's "comfort zone," i.e., those activities in which the child currently finds comfort, such as: Lining up blocks, turning lights off and on, spinning things, making noises, deep pressure, etc., etc.³⁶

At Levels 1 & 2 (Shared Attention and Engagement):

- The child still prefers "comfort zone" activities
- He/she can pay attention to, tolerate, and/or enjoy brief interactions:
- There may be evidence of attachment
- The child responds to comfort and attention
- The child enjoys sensory-motor play
- There is limited receptive language, e.g., the child turns to his or her name occasionally
- Interactions are brief and/or inconsistent

At Levels 3 & 4 (Two-way Communication):

- There is more sustained engagement: The child seeks attention, comforting; he/she imitates simple gestures
- He/she initiates interactions based on needs/wants
- He/she enjoys sensory-motor games
- Receptive language is more consistently emerging
- Gestures are combined with an increasing number of words
- There is understanding of basic emotional themes, e.g., approval, alarm, etc.

At Level 5 (Shared Meanings):

- The child communicates ideas through words
- He/she engages in simple pretend play with adults
- And in simple pretend play with children
- He/she understands facial expressions
- He/she responds to 1 & 2 step commands
- There is emerging self concept (e.g., body parts)
- There is a developing sense of humour
- He/she spontaneously greets familiar people

At Level 6 (Emotional Thinking):

- The child expresses and identifies own and others feelings
- He/she recognizes a relationship between feelings, behaviour and consequences
- There is more complex social dramas/play with themes

³⁶ Introductions to Dr. Greenspan's Developmental, Individual Differences, Relationship-Based (DIR) model – "Floortime" – can be downloaded from the following websites:

www.coping.org/

www.polyxo.com/floortime/buildingplaypartnerships.html

and from

www.floortime.org

- He/she takes someone else's view
- He/she is aware of social norms
- He/she is aware of safety, time, the past, etc.
- He/she talks in paragraphs
- There are multiple sequences of interactions

The Play Project

You can, and probably should, also purchase the DVD, The P.L.A.Y. Project Workshop Level 1: Play and Language for Autistic Youngsters by Richard Solomon, MD. This DVD contains a complete workshop, including play-based interventions, based on Greenspan's DIR model.³⁷ It suggests a variety of playtime approaches and activities appropriate for use by parents at each of Greenspan's developmental levels:

Levels 1 & 2 play activities might include

- Gently shaking arms or legs
- Gently squeezing arms, legs, head
- Swinging in a blanket
- Gentle pressure
- Gentle wrestling
- Tickling
- Blowing on skin, hair, face
- Water play of all kinds
- Spinning the child on a swing or swivel chair
- Building blocks up and knocking them down, with accompanying commentary
- Dropping things, with accompanying "Boom"
- Flipping pages of a book

Levels 3 & 4 play activities might include

- All of the Levels 1 & 2 activities
- Chase: "I'm going to get you"
- Very simple pretend play, such as phone to ear, feeding the dolly, cars crash and make a crashing sound
- Finger painting
- Puzzles
- Play with farm animals, dump trucks, trains
- Song games such as "Wheels on the bus," "Eensy weensy spider," "Old MacDonald"
- Building forts from cardboard boxes, tents from blankets over chairs, etc.
- Ready-set-go games

³⁷ In contrast to most ABA based interventions, The P.L.A.Y. Project (playproject.org) is specifically designed to be a parent training approach, somewhat similar to Gutstein's Relationship Development Intervention (RDI), which will be discussed later in this publication. "It is primarily designed to help parents be their child's best play partner." (Solomon, R. (2008). Play-based Intervention for Very Young Children with Autism: The P.L.A.Y. Project. In C.E. Schaefer, S. Kelly-Zion, J. McCormick, and A. Ohnogi (Eds). Play Therapy for Very Young Children. Lanham, MD: The Scarecrow Press.

Levels 5 & 6 play activities might include

- Pretend: dress up, doll (or action figure) tea party, dinosaurs chasing each other
- Hide and seek
- Reading to the child (and vice versa) – probably mainly looking at the pictures and talking about what is happening in the story line
- Tic-tac-toe
- Musical chairs
- Treasure hunts
- Simon says
- Board games: Snakes and ladders
- Card games: Fish
- I spy
- More complex pretend games

Gutstein's Relationship Development Intervention (RDI)

Another important approach to teaching children with autism is Steven Gutstein's Relationship Development Intervention (RDI). According to Gutstein, the sensory and processing difficulties present in individuals with autism spectrum disorders makes it hard for them to adapt well to rapidly changing situations. Change is more likely to be experienced as threatening than as exciting, with the result that individuals with ASD tend to prefer sameness, and to experience novelty as disruptive. Unfortunately (from a learning perspective), social situations are not simple and unchanging. To get along socially, you have to learn:

- to "see things through your partner's eyes,"
- to coordinate your actions with theirs,
- to know when the two of you are not on the same track,
- to know how to repair misunderstandings,
- to learn to observe how others feel and, based on that information, to continually change your own behaviour so as to help keep them happy,

Gutstein has broken down the development of social/emotional relating into twenty-eight steps (see www.rdiconnect.com for a more complete listing of the various steps in this developmental process):

- Examples of beginning steps: emotion sharing, joint attention, social referencing and coordinating actions
- Examples of intermediate steps: collaboration, joint attention, conversation, perspective taking
- Examples of advanced steps: forming personal, family and group identities

He strongly advises that you not try to rush this process, on the grounds that doing so would only lead to short term gain and long term loss – each step needs to be well consolidated before moving on to the next one. It can take the better

part of a year to even get beyond the first step or two in this process of learning to be a social human being, so parents should not get discouraged.

“Essential Elements” of any RDI program include:

- A thorough Relationship Development Assessment
- Clear objectives based on this assessment
- Data collected daily and summarized weekly
- Program modifications based on this data.
- Parents adopt RDI as a lifestyle and primary (but not necessarily to only) intervention
- Consultants function as parent facilitators
- Dyads and groups are formed from peers matched by Relationship Development stage. Participants are not placed in peer dyads until they have mastered all of the Functions through Stage 8. Participants are not placed in small peer groups until they have mastered all of the Functions through Stage 10.
- Intervention plans include specific methods for developing episodic (i.e., autobiographical) memory, including previewing and reviewing experiences. RDI programs also include an emphasis on the development of relative thinking and executive functioning skills.
- Parents:
 - function as the primary coaches/facilitators
 - they work to develop a Master/Apprentice relationship with their child
 - they emphasize declarative communication
 - they create frequent periods of “productive uncertainty” to provide the child with opportunities/motivation for referencing
 - they rely on indirect prompts whenever possible
 - they leave sufficient room in the daily schedule for experience sharing
- Relationship Development Intervention should be (according to Gutstein) carried out under the supervision of a qualified RDI consultant.

Gutstein is also trying to develop a model which will teach the 55% of communication that is

- (1) nonverbal and
- (2) so much a part of social relating.

Consequently, in addition to teaching parents to think in terms of establishing a master-apprentice relationship with their child, Gutstein is attempting to teach them to communicate with their child nonverbally (as well as verbally, of course).

Much of the parent-provided instruction is based on modeling – reframing “instructional control” (a primarily reinforcement-based concept) as “a master-apprentice relationship” (a primarily modeling-and-reinforcement-based concept). In an effective master-apprentice relationship, it is the “master” (the adult) who teaches the “apprentice” (the child). To do so, the master has to have instructional control, but a master-apprentice relationship involves more than just the adult having instructional control. It also implies a commitment on the part of

the adult to teaching the child, through a combination of modelling and reinforcement, the practicalities of living as an emotionally-relating person – which requires more of a commitment to interacting with the child than is usually required of the parents of most typically-developing children.

Many of these same techniques can be found in “More Than Words” and “The Autistic Spectrum Parents’ Daily Helper.” You can also expect to see them in any good ABA program, although perhaps not so formalized. However, RDI techniques/emphases that I would expect to see receiving greater emphasis in ABA programs in the near future include:

- the insistence on parental involvement in the child’s program
- more attention to “dynamic” intelligence
- an increase in the use of declarative language
- more emphasis on social relating
- more attention to nonverbal communication
- increased “productive uncertainty” (so that the child looks to the instructor for guidance). Note that, to be “productive,” the uncertainty has to be delivered in small enough doses that it is not overwhelming and gradually increases the child’s tolerance for the fluidity typically encountered in social situation
- the use of photos and memory books to facilitate autobiographical memories

Finally, while many RDI concepts appear to be quite abstract when compared to the concrete behaviours being addressed by ABA approaches to the treatment of children with autism, as soon as you ask yourself, “What will I use as an indicator of success?” you will find yourself needing to choose concrete, observable behaviours to use as evidence that the “abstract” objective has been achieved. Thus, for anyone interested in tracking actual progress, the apparent RDI-abstract and ABA-concrete dichotomy disappears in actual practice – which brings us to the data recording procedures that are such a vital part of ABA.

Teaching Advanced Learners

You may remember (1) that I had noted that “NET is where parents can really shine!” and (2) that Establishing Operations, Inc. recommended NET be the main teaching model for both beginning and advanced learners, where engagement is crucial to program goals (with ITT being the main model for teaching the many intermediate-level language-acquisition skills needed by intermediate learners). Combining these two thoughts, I find Gutstein’s master/apprentice concept has considerable appeal as a way of teaching the more advanced social and daily living skills needed as a child moves into adolescence and adulthood. This is not to say that these skills cannot be taught more formally through social skills programs, just that I really like the idea of the parents taking on the role of main

instructor at this stage of the learner's development. Of course, that's easy for me to say – I am not the parent of a child with autism. 😊

Remember that ABA requires that we:

- Determine what the child already knows.
- Break the material to be learned into relatively small steps.
- Starting where the child is, teach the next steps in each part of the curriculum.
- Track the change – data collection is an important part of ABA
- Modify your procedures and teaching targets as necessary to ensure continuing progress.

The application of pairing, modelling, and reinforcement to this type of teaching, albeit within a master/apprentice framework, will ensure that the science of ABA continues to be effective as learners progress from intermediate to more advanced goals.

Data Recording Procedures: Probe Data

Some instructors record correctness of response data after every single trial (and it is sometimes important to do this). Others, however, do a quick check at the beginning of each session, to determine whether or not the child has retained the previously-learned items being probed. More and more instructors are moving towards recording probe data³⁸ rather than recording the correctness of the child's answers after every trial. This allows for more teaching to be done.

Have a list of items to check, to see if they have been learned. The process of taking probe data should look as much like an actual teaching session as possible: mixing easy and difficult tasks, etc. If the correct response is given quickly and accurately and with sufficient volume, record a YES. Otherwise, record a NO. If NO, prompt to correct the response, move on to the next trial, and put that item back into the to-be-learned bin.

Data Recording Procedures: Charting/Graphing:

"A picture is worth a thousand words?" - B. Taylor

Charting (i.e., graphing) your child's progress gives you a really handy way of determining at a glance just how well your teaching program is working, and it should be an important part of every ABA program! Unfortunately, for many of the service providers who work with our children, representing data graphically

³⁸ See the discussion of probe data in the Mariposa School's Employee Training Manual, which may be downloaded for free from www.mariposaschool.org

seems to be more difficult than I think it ought to be – hence this brief introduction.

Line graphs are used to show how something – learning or forgetting, for example – changes over time. They have several components: a title, an X and a Y axis, the data being plotted (i.e., displayed in graphic form), and a legend that tells what each line represents (since line graphs can display more than one data set at a time, and the legend tells which line represents which set of data).

John Eshleman’s excellent “celeration charting” picture set – which you can find at: members.aol.com/standardcharter/learnpix.html – provides many excellent graphing examples. The data for these graphs were plotted on the logarithmic “standard celebration chart” paper, and originally intended to illustrate “celeration charting,” which is based on the recognition that, when done properly, learning doesn’t just increase, it accelerates over time. The principles of marking data points on a graph are more-or-less the same, however, regardless of whether you are plotting the data on ordinary graph paper or on Standard Acceleration Chart paper:

- Record time on the horizontal axis.
- Record the number of items correct, or the number of items correct per unit of time, on the vertical axis, for each area of the curriculum that you are working on.

Nevertheless, while any kind of charting is good, Celeration charting³⁹ (see Appendix A for a beginning introduction) is excellent, and I would encourage you to investigate it.

To reiterate, charting (i.e., graphing) your child’s progress needs to be part of every ABA program because it gives you a really handy way of determining at a glance just how well your teaching program is working. *If a graph does not show an increase (say over a period of a week), you need to change what you are doing; and nine times out of ten that lack of improvement will be due to insufficient reinforcement⁴⁰ of the behaviours that you want the child to learn!*

Putting It All Together: Developing an Educational Plan for Your Child

³⁹ A how-to-chart manual by Rick Kubina can be found at <http://www.precisionteachingresource.net/chartoverview.pdf>

and one by Carl Binder at http://www.binder-riha.com/Binder_ISPI2004_Charting.pdf

⁴⁰ Remember that reinforcement is a consequence that results in learning. If you are not seeing learning, the consequence does not constitute reinforcement. Many instructors incorrectly assume, having established the reinforcement value of social approval through having paired it with some inborn or previously learned reinforcer, that it will continue to be a reinforcer for all time. They forget that social approval will probably have to be paired with more tangible reinforcement from time to time in order to maintain its (learned) value as a reinforcer.

Now that you know a bit about ABA – actually quite a bit, if you have managed to absorb most of what is in this paper – it is time to develop an educational plan for your child specifically. The Individual Service Plan (ISP) Checklist included in this document as Appendix B will give you a fairly good idea of what I think ought to be included in such an educational plan. The services of an experienced ABA-trained senior therapist would be very valuable at this stage of the process.

Appendix A

Celeration charting was developed within the context of an ABA-based approach to instruction which is known as Precision Teaching⁴¹. Developed by Ogden Lindsey beginning about 1965, Precision Teaching is based on two main premises: (1) that the student can't be said to have truly mastered a skill until he/she is able to respond not only accurately, but quickly as well,⁴² and (2) that acquisition is best monitored through charting the number of correct responses per unit of time rather than just charting either the number or percentage of items correct.⁴³

In the case of Celeration charting,⁴⁴ therefore, you are going to chart the number of items correct within some particular period of time, e.g., during a ten second interval recorded each hour, during a five minute interval recorded every teaching session, etc.

Although the Standard Celeration Chart looks more complicated, it is really so simple that even six years olds can easily learn it and teach it to others. Furthermore, it has the added bonus of being more useful than ordinary graph paper since, when the child's program is set up properly, the child's rate of acquisition of new knowledge (as indicated by his or her performance on the tasks being taught) should accelerate over even short periods of time, up to some reasonable goal – and even a glance at the chart will tell you whether or not that is happening.⁴⁵ In fact, Lindsley (1990) reports that this approach to data

⁴¹ There is a recently developed "wiki" that contains a lot of information about Precision Teaching, including Celeration Charting: <http://precisionteaching.pbwiki.com/FrontPage>

⁴² Examples of frequency data are number of mands per hour, number of colours tacted (e.g., on a page of randomly ordered coloured circles or through the teacher presenting an assortment of differently-coloured cards) per 30 seconds, number of peer-to-peer interactions per hour, number of words typed per minute, etc. Most fluency practice drills are timed over a one minute interval.

⁴³ See the paper by Carl Binder (2004) at www.fluency.org/Binder_ISPI2004_Charting.pdf and the Handbook of the Standard Celeration Chart, Deluxe Edition, by Pennypacker, Gutierrez and Lindsley (2003), published by the Cambridge Centre for Behavioral Studies and available from the CCBS Store at www.behavior.org

⁴⁴ See www.celeration.org For anyone interested in this pursuing this further, the following internet resources will be useful:

www.celeration.net

www.fluency.org and www.fluency.org/MeasurementCounts_Links.html

members.aol.com/standardcharter

www.chartshare.net

seahorse.mma.edu/~sarna/index.html and seahorse.mma.edu/~sarna/sprints.html

www.teonor.com/ptdocs

psych.athabascau.ca/html/387/OpenModules/Lindsley

home.wi.rr.com/penzky/pt.htm

www.teachyourchildrenwell.ca/Home/mainpage.htm

www.binder-riha.com/measurement_ideas.pdf and www.binder-riha.com/publications.htm

(see 2004 and 2004, April

⁴⁵ Free downloadable charts may be found at people.ku.edu/~borns/ and how to use them is well-illustrated in and by John Eshleman at members.aol.com/standardcharter/learnpix.html

analysis has cut the time required for teachers' analysis and communication of student achievement to a tenth of what it would otherwise be!

For example, as a rule of thumb, three intervals of flat data on the celebration chart requires a change in teaching strategy:⁴⁶ If the student is not learning because the material being taught has already been fully mastered, you need to change:

- What is being taught – since what is being charted may already have been fully mastered – or movement to another location to check on the stability of the response if the material has been fully mastered.

On the other hand, if the material has not already been fully mastered, you might consider making any of the following changes:

- Reinforcement of correct responses (although later, not while you are checking to see what the child has learned). And remember, reinforcement is what works; too many instructors think that they can get away with using nothing but praise as reinforcement, and that only works when it works!
- Temporary simplification of what is being taught; drop back to something easier if that is what is needed.
- Teaching so as to correct the observed errors.

⁴⁶ According to Cancio & Maloney (1994), other decision rules include making a change in teaching strategy if the graph indicates that (1) the child's performance has been at your teaching goal for a couple of days, (2) the minimum acceleration is less than X 1.25, (3) correct responses are decelerating, (4) error responses are accelerating, or (5) the celeration line is less than had previously been projected.

Appendix B

ISP Checklist⁴⁷

Components	Completed
<i>Basic identifying information</i> (This should be extensive enough to give a more-than-cursory picture of the child and his/her environment.)	
<i>Summary of the child's exceptionalities, including any relevant medical and assessment information</i>	
<i>A clear and specific statement of the child's strengths and needs</i> (Note that needs are not the same as challenges/weaknesses. Challenges/weaknesses may define a problem; needs help to define the solution, i.e., what the child needs in order to overcome or compensate for the problem.)	
Current level of achievement in all relevant areas, such as social interaction, communication, play skills, adaptive skills, and self-help skills, as well as academic and cognitive skills. This needs to be specific rather than normative. That is, we need to specify what the child knows or can do, rather than compare his or her achievement to that of other children (Note: The ABLLS provides a relatively easy way – although not the only way – to document part of this information for children beginning or early in their school career, as well as to help determine your immediate teaching objectives.)	
<i>Goals and/or general expectations for what you want the child to have achieved by the end of the next 4-12 months in each skills area, i.e., goals for each area in which the child needs to develop skills</i>	
Behaviours to be learned / Intermediate objectives / teaching targets / stepping stones ⁴⁸ along the way to the goals that you have set, and <i>the dates by which you expect them to have been learned</i>	
Indicators of achievement and progress, i.e., how will achievement (of <u>each</u> teaching target) and progress be assessed?	
Level of intensity and settings for the instruction, i.e., number of hours of instruction and where they will be delivered	
Teaching accommodations and resources, including any augmentative	

⁴⁷ Italics are used in the following chart to indicate items which, in my experience, service providers often need to be reminded to document in the child's ISP.

⁴⁸ The following components of a good objective/teaching target have been suggested by Brian Liu-Constant <briancrc@hotmail.com>:

The context, setting, or conditions; the student's name; the target behavior, skill, or activity; the direction that the behavior should change (e.g., increase, decrease); the measurement unit (e.g., total, average, percent, rate, duration, etc...); the evaluation period (e.g., 3 consecutive sessions, last 5 days of quarter, etc...); and I would add the target date (e.g., by June 2008). For example: "In the context of math instruction, when given index cards with individual multiplication problems for the times tables 1 through 5, Johnny will say the answer, increasing the frequency of accurate responses to 50 per minute for 2 consecutive days by June 2008" rather than "Johnny will increase his knowledge of multiplication facts" and "In the context of labelling instruction, when presented with a sheet of random colours, Johnny will correctly name 15 colours within 10 seconds across three instructors by June 2008" rather than "Johnny will learn his colours."

communication systems contemplated or being used	
<i>Provision for maintenance and functionality of the behaviours being taught, in terms of their generalization, endurance, stability across situations and applicability within the child's life</i>	
<i>Transition planning, e.g., to nursery school, kindergarten, or Grade one. Note: You need to be planning ahead from the very beginning.</i>	
<i>Other professionals and their responsibilities within the child's program</i>	
<i>The parents' roles and responsibilities within the child's program</i>	
<i>The date the ISP was completed</i>	
<i>Clinical Supervisor responsible for the program has signed off on the ISP</i>	
<i>Parents have signed off on the ISP</i>	
<i>Parents and AIS have each been given a copy of the ISP</i>	

Other important points to consider in developing the Individual Service Plan:

<i>Parents should be active participants in development of the child's ISP</i>	
<i>Parents should be being trained in ABA instructional procedures, e.g., through observation</i>	
<i>Procedures for data collection and analysis, including graphing</i>	
<i>A specified schedule for review/updating of the ISP.</i>	
<i>Reinforcers that have been found to be particularly effective with this child</i>	