HYPERLEXIA MANUAL

A GUIDE TO CHILDREN WHO READ EARLY

By
Darold Treffert, MD
Karen Bartelt, OTR
Beth Dardis, SLP
Bryan Mischler, CAPSW

Treffert Center
371 E. First Street
Fond du Lac, WI 54935
(920) 907-3987
treffertcenter.com

Agnesian Healthcare is sponsored by the Congregation of Sisters of St. Agnes
This Hyperlexia Manual: A Guide to Children Who Read Early has been provided to you FREE of charge. Please consider a suggested donation of $20 to offset costs and continue this FREE distribution. You can do so by visiting agnesian.com/donate-now.

We appreciate your interest in our work at the Treffert Center. We can offer the best outcome to the individuals and families we serve through an accurate diagnosis and intervention.

Funding is always needed for us to extend our services in
• Direct care
• In-home and center-based care

• Programs promoting music, art, mindfulness, yoga and social skills
• Transition services across the lifespan
• Ongoing research projects
• Training initiatives

Your donations will ensure we continue to expand the life’s work and legacy of Darold Treffert, MD, and the Treffert Center bringing strength based care, happiness and hope to all those that reach to us for guidance.

“If we can provide happiness and hope to those who reach out to us for guidance, we will be able to say - mission accomplished. I want that to be the legacy of the Treffert Center.”

D.A. Treffert MD

---

**Table of contents**

- Foreword ..................................................................... 1
- Hyperlexia: Frequently-Asked Questions. ............................. 3
- Early Infantile Autism according to Dr. Leo Kanner ................... 6
- Some Typical Symptoms and Behaviors Seen in Hyperlexia III ........ 7
- Phyllis Kupperman ............................................................. 8
- Stephen Camarata ............................................................. 9
- Hyperlexia as Seen in the Classroom ....................................... 13
- Five Guidelines for Empowering Children with Hyperlexia ............ 15
- Creating an Environment Conducive to Learning ....................... 17
- Becoming an Effective Learning Partner .................................. 19
- Goals for Being a Great Play Partner as Found in Play to Talk .......... 21
- The Five Steps of Engaging as an Effective Learning Partner .......... 22
- Four Goals for Achieving Developmental Milestones ................... 23
- Sensory Play ................................................................. 24
- Enriching Activities that “Teach to the Talent” of the Child with Hyperlexia 25
- Useful Techniques, Strategies and Activities for the Classroom ................ 30
- Success Stories ................................................................ 34
- First Person Account ........................................................... 36
- Hyperlexia III: Separating “Autistic-like” Behaviors from Autistic Disorder .................. 38
- Post Script .................................................................. 46

treffertcenter.com
In my work with savant syndrome, I receive almost daily e-mails that begin “I’ve got a son or daughter who...” These parents have noted some conspicuous art, music, mathematical or memory abilities, for example, in their child. They write to inquire whether those exceptional abilities might be savant skills, and, if so, what is the best way to approach those usefully as strengths, and how parents and teachers can use those skills as learning and treatment opportunities.

Having received hundreds of those over the years, I noted that when the special skill was hyperlexia - precocious reading ability coupled with early obsessive preoccupation and fascination with numbers and letters - often a diagnosis of autistic spectrum disorder (ASD) had been applied to such children. Yet in following these children over time the outcome was much more positive than many other cases of ASD. The “autism” symptoms faded over time leaving eventually a very bright, neurotypical child without the hallmarks of ASD.

As you will see in this manual, I eventually separated hyperlexia - children who read early - into types 1, 2, and 3. Type 1 are neurotypical children who simply read early. Type 2 are children who read early and the hyperlexia is a “splinter skill” along with many of the other characteristic symptoms of ASD. Type 3 are children who read early but have what I call “autistic-like” symptoms that fade over time rather than occurs in more permanent ASD. As it turns out, in these cases the autism diagnosis had been mistakenly applied prematurely and inaccurately.

Two caveats however. The term “splinter skill” does not mean such an ability, such as hyperlexia, is unimportant or can be disregarded. Rather it can be an important teaching tool to support development of language and social skills. And while the “autistic-like” features do fade over time in hyperlexia 3, that does not happen all by itself. Often those features and behaviors, as in hyperlexia 2, require the same interventions addressing the communication difficulties, sensory integration and social issues taking into account the learning style of all children with hyperlexia whether hyperlexia 2 or 3.

In short, some children with hyperlexia are on the autistic spectrum and some are not, but both require, for a time at least, intervention strategies.

Two things have been paramount throughout my medical career: “The beginning of wisdom is to call things by their right name” (accurate diagnoses do matter in both treatment and research), and “the first step in treatment is to make the correct diagnosis.” Thus my concern that hyperlexia, when present, be properly separated into its component subdivisions for proper treatment and educational interventions. This helps provide more accurate prognoses to worried and concerned parents and families.

I began my career 57 years ago setting up a treatment unit for children with autism. I was fortunate, during my training, to learn from Dr. Leo Kanner himself who first described early infantile autism in 1943. Dr. Kanner often visited the University of Wisconsin Medical School where I trained. So I have deep roots in trying to better understand and treat autism, and I have deep respect and admiration for families who are so devoted to the struggles and challenges that children with autism can present. It is impressive to see the progress these children can make with loving families. So I always remind these families that love is a good therapist too.

In my separating out hyperlexia 3 from hyperlexia 2, and emphasizing the need for caution in applying a diagnosis of “autism” in children who read early, some have felt that I am in some way “anti-autism” or casting ASD in some more negative way in hyperlexia 2 than hyperlexia 3. That simply is not the case. ASD is a serious disorder whenever present and “calling it by its right name,” so important in any disorder, is not any attempt to provide some hierarchy of importance between the various way children who read early present themselves. It is a simple reiteration that the first step in treatment, whatever the condition, is to make the correct diagnosis.
As it turns out, often the interventions in hyperlexia 2 and 3 are the same, early on, and only time makes the distinction clear. My hope is that in following now over 275 cases of hyperlexia, the ability to sort out “autistic-like” symptoms from ASD itself will occur earlier and earlier in children who read early, or speak late.

For you will see in this manual that same warning about using caution when making an ASD diagnosis applies to children who speak late just as it does to children who read early. Separating hyperlexia 3 from hyperlexia 2 correctly in both groups simply provides that the correct interventions, treatment and educational decisions will be made and applied appropriately to children in which ever group they belong. And, in the long run, by so doing, we will be able to better separate “autism” into the several disorders that it is possible to recognize it as a strength and valuable teaching tool.

Hyperlexia is precocious and unexpected reading skills and abilities in children way beyond their chronological age. It is a fairly recently named condition (1967) although earlier descriptions of precocious reading do exist. The early reading itself is often preceded by intense and obsessive interest in letters and numbers as an infant.

P.S.
As I was putting the finishing touches on this manual, I received a letter from a mother about her now 31-year-old son who was hyperlexia 3. He read spontaneously at age 14 months and was doing anagrams at age two. At age three, formal evaluation showed decoding ability at the 12th grade level and comprehension at the 10.5 level. His speech was somewhat delayed. He had a phenomenal memory, tremendous inquisitiveness and social connectedness, which set him aside from those on the autistic spectrum.

“He has grown up to be a delightful, kind, funny young man with a plethora of interests. He is well liked by his peers. If I had seen you work 30 years ago, it would have saved me hours of upset, guilt, worry, etc., as well as arguments with the educational community. I am happy for parents of today that they have access to your work. Back then, there was no information and we were on our own. I hope our story may be of some comfort to parents of young children, trying to find their way.”

And that is exactly my hope also with this manual.

Darold A. Treffert, MD

1. What is hyperlexia?
Hyperlexia is precocious and unexpected reading skills and abilities in children way beyond their chronological age. It is a fairly recently named condition (1967) although earlier descriptions of precocious reading do exist. The early reading itself is often preceded by intense and obsessive interest in letters and numbers as an infant.

2. Is hyperlexia always a part of autistic spectrum disorder?
No. While many books, articles or web sites indicate that hyperlexia is always a sign or symptom of autism or some other developmental disorder, our studies, and studies of others, find that not always the case.

3. What types of hyperlexia do exist?
For a number of years, the Wisconsin Medical Society has maintained a savant syndrome web site at savantsyndrome.com. As a result, Dr. Treffert has received many “I’ve got a son or daughter who…. e-mails from parents inquiring about possible savant skills in their child. After analyzing several hundred such e-mails from parents whose child was an early reader, Dr. Treffert identified three types of hyperlexia.

Hyperlexia 1
These are normal (neurotypical) children who simply read early. The ability is attention-getting and conspicuous because of its early onset compared to their peer group. Hearing a nursery school child reading books to his or her classmates is quite astonishing. Usually that reading ability is accompanied by comprehension. Over time, most of the other children also learn to read at expected ages so hyperlexia 1 is a transient ability, just ahead of its time in otherwise normal children.

Hyperlexia 2
It has been recognized for many years that some children with autism or related conditions have a permeating and excessive interest in letters and numbers, spending many hours obsessively arranging or re-arranging magnetic letters on the refrigerator or any other surface, or perhaps writing or re-writing them anywhere convenient, including the walls or sidewalk. This is accompanied by unusual memorization of these letters or numbers. Often this obsessive preoccupation extends to arranging and re-arranging toy cars, puzzle pieces or other such objects.

Eventually this number/letter obsessiveness morphs to early reading ability in jarring juxtaposition to other developmental limitations. Very often an autism spectrum disorder diagnosis has already been applied, or other diagnoses such as PDD/ NOS, aspergers, behavior disorder, language disorder, learning disorder or gifted have been used.

These compartmentalized super-abilities are often referred to as “splinter skills” in autistic youngsters and in addition to early reading can include music, art or mathematical abilities for example. Usually remarkable memory capacity is present as well. While “splinter skill” implies a skill such as hyperlexia is unimportant or can be disregarded, the opposite is true. The reading ability can be used to support development of language and social skills. Teachers need to recognize it as a strength and valuable teaching tool.

These children comprise the Hyperlexia 2 group. The early reading ability is indeed a part of an autistic spectrum condition as often described in some books, articles or web sites. In these children the hyperlexia is accompanied by other cognitive, learning or social skill difficulties usually seen in ASD including some symptoms or behaviors, such as echolalia, withdrawal, stimming, insistence on sameness, poor eye contact, repetitive behaviors and resistance to both giving and receiving affection, for example. They often have difficulty with auditory processing and sensory integration.

Hyperlexia 3
These children show the same preoccupation with letters and numbers very early as infants and later begin to read. They too show many of the characteristic signs, behaviors and symptoms of ASD as seen in hyperlexia 2. Like children with hyperlexia 3 they often have difficulty with auditory processing, sensory integration and social delays. But unlike...

children with hyperlexia 2, the “autistic-like” behaviors in hyperlexia 3 children fade over time with very positive outcomes, and little or no autistic residual.

The fact that the “autistic-like” features and behaviors fade over time does not mean that happens all by itself. Often those “autistic-like” symptoms, communication difficulties, sensory integration disorders and social awkwardness require the same interventions, for a time, as in hyperlexia 2 individuals taking into account the learning style of all children with hyperlexia.

Typically parents often describe these children as much less withdrawn and more engaged, particularly with adults, than is often the case with ASD children. There is much more eye contact and involvement in both giving and receiving affection. Overall they tend to be more socially comfortable and the maladaptive behaviors are less intense and less frequent than seen in more classic “autism.” Hence the term “autistic-like.”

A more detailed description of these three forms of hyperlexia, along with examples of each group can be found in the paper attached. Hyperlexia III. Separating ‘Autistic-like’ Behaviors from Autistic Disorder, Assessing Children who Read Early or Speak Late. Wisconsin Medical Journal, Volume 110, pages 281-286, December, 2011.

A number of success stories in this group both from parents, and some first person accounts from hyperlexia 3 persons, now adults, document more positive outcomes in hyperlexia 3 than hyperlexia 2. While this progress is sometimes referred to as “outgrowing” autism, that is a misnomer since these individuals, now relatively symptom free, were given a mistaken diagnosis in the first place.

What significance do these types of hyperlexia have from a diagnostic standpoint?

Hyperlexia 1 is not a disorder as such and really does not require nor warrant a diagnosis. The differences in intervention strategies, educational placements, outcomes and long-term implications of an ASD diagnosis warrants caution when applying an ASD diagnosis to a child who reads early or speaks late. (more about late speaking children later). While early diagnosis and early intervention are to be applauded in all children with developmental delays, if the child has hyperlexia as a presenting symptom and ASD is a possibility, a differential diagnosis approach should be considered before applying a definitive diagnosis of ASD. A period of watchful expectation will reveal the natural history of the disorder and whether the hyperlexia falls into type 2 or type 3.

What is the most appropriate intervention to help a child with hyperlexia 2 or 3?

There are three interventions that have been reported to be especially helpful in children with hyperlexia 2 or 3. Those include speech and language therapy, occupational therapy and play-based ABA (applied behavioral analysis). A sound treatment program using the child’s strengths and interests to help with areas of weakness is vital to success. Therapists who are open minded, willing to adapt the child’s goals and curriculum, and creatively and cooperatively solve problems are best suited to deal with the unique challenge these children present. Finding the right people to implement the child’s treatment plan is critical to success.

The most important thing to remember is to use written language to help teach the child the skills they need. When in doubt, write it out. This empowers the child by building confidence and reducing stress as they stay within their comfort zone during the learning process.

The main, critical difference in intervention between children with hyperlexia 3, as opposed to hyperlexia 2, has to do with education placement. Hyperlexia 3 children benefit from being fully integrated into their classroom with same age peers. Alternative placements usually provide fewer appropriate communication partners and less opportunity to engage in social communication. Hyperlexia 2 children, in contrast, most often benefit from alternative placement in special education classrooms because mainstream classrooms may be too over-stimulating and course material may be better taught and learned in more relaxed one-on-one arrangements.


Education placements must be individualized in either group taking into account each child’s individual skill set. Often parents need to become very active advocates on behalf of their child to obtain the most optimal school placement.

How do these same observations apply to children who speak late?

Dr. Stephen Camarata, professor in the department of Hearing and Speech Science at the Vanderbilt School of Medicine, has made what are essentially these same findings with respect to hyperlexia 3 in some children who speak late. In a 1998 book titled “Late Talking Children,” Thomas Sowell noted that some children, including his son who had delayed speech, displayed some “autistic like” behaviors and symptoms very similar to those seen in what he calls hyperlexia 3. Like that group, children with delayed speech had often been given a diagnosis of autistic spectrum disorder which they later “out grew.” He advised the same caution with respect to giving that definitive diagnosis in early childhood to those children who have delayed speech.

Following up on that work, Dr. Camarata published a book titled “Late-talking Children, a Symptom or a Stage?” in 2015. He likewise urges caution in applying an ASD diagnosis in children with delayed speech. Some of these late talking children, because of their precocity and fund of knowledge are referred to as having Einstein Syndrome. The book also provides intervention strategies and education resources for parents and teachers when they encounter a child who speaks late. A brief summary of his findings and recommendations can be found in an MIT Press blog titled “Five Minutes with Stephen Camarata.”

What’s a parent or teacher to do when encountering a child who reads early?

As elsewhere in medicine, the first step in treatment is to make the right diagnosis. When a child presents with hyperlexia, that diagnosis is best made by a multi-disciplinary team familiar with ASD and the several forms of hyperlexia described above. If the diagnosis involves an ASD consideration, that diagnosis should best be listed as a differential diagnosis until passage of time reveals the true nature of the “natural history” of the disorder (i.e. whether the hyperlexia fits the hyperlexia 2 or 3 category). Such a workup would generally occur at a child developmental or similar clinic and the multi-disciplinary team would ordinarily include a speech and language therapist. The final diagnostic findings would be shared with the school team responsible for the individual education plan (IEP) for proper education decisions. And such a workup would provide the foundation as well for such other interventions as might be needed.

Additional information about hyperlexia can be found on the savantsyndrome.com web site along with the original paper on this matter included in this booklet.

Darold A. Treffert, MD
The beginning of wisdom is to call things by their right name.

In 1943, Dr. Leo Kanner described, for the first time, a condition he named early infantile autism. Since that time, that condition has lost its specificity so it might be useful to return to the elements he described as being a part of that condition. His article was based on 20 cases, 16 boys and four girls, he had seen during his extensive career as a child psychiatrist.

“Suspicion of deafness,” but hearing was intact
“Phenomenal feats of rote repetition,” “memory is phenomenal”
“Extreme autistic aloneness,” “like in a shell” and “inaccessibility”
“When he is with people he doesn’t look at them”
“Does not respond to name being called”
“Delayed echolalia,” “literal repetition of a question”
“Literalness,” “the meaning of a word becomes inflexible with original connotation”
“Personal pronouns are repeated just as heard,” “speaks of himself as you”
“Anxiously obsessive desire for the maintenance of sameness”

“Relation to objects instead of people”
“Good cognitive potentialities” even though often referred as cognitively impaired
“Serious mindedness” and “anxious tenseness”
“Highly intelligent parents” as a common denominator in these children’s background

The items above in bold type were those Dr. Kanner put in italics in his paper.

I emphasize this paper by Dr. Kanner because applying the diagnosis of “autism” has in many cases become too casual and diluted, and ignores the core ingredients intrinsic to this serious condition. Not all cases have each of these features, but if the cause, and specific treatment of “autism” is ever to be identified, there needs to be careful attention to calling cases by their right names.

In my medical school training, I was fortunate enough to learn from Dr. Kanner himself on his visits to Madison. He was a remarkably observant clinician and just a really fine person.

Resource:
Kanner, L., Autistic disturbances of affective contact
Nervous Child, 2, 217-250 1943

**Some typical symptoms and behaviors seen in hyperlexia 3**

Fascination with FBI piracy warning and credits on movies at age nine months; memorizes scripts verbatim.

Baby blocks lined up like a scrabble board with letters in alphabetical order at age 18 months. Obsessed with letters which are his or her toys; sometimes spells instead of speaks; remarkable puzzle skills; fascinated with shapes. Wedded to a magnetic alphabet board carried everywhere.

Reading labels of over-the-counter drugs or all the canned goods and cereals when being wheeled down in the children’s cart of the pharmacy or grocery store at age two.

Unusual sensitivity to sound or other forms of sensory overload are frequent.

Memorizing license plate numbers, birthdays, solar system and GPS like trip directions.

Learned the alphabet at 18 months, spelling words at 24 months, reading self-taught 30 months.

Fascination with music, memorizing and humming songs after a single exposure; perfect pitch.

Unexpected expertise with mathematics, equations and calendar calculating.

Difficulty processing what people say to them rather than the written word, and more difficulty with abstract concepts than concrete language. Writing out verbal instructions or conversation helps. The written word can be used as an educational tool to speed language acquisition.

Ability to read in kindergarten may test out at the seventh grade level.

Delayed speech is common.

Social awkwardness especially with other children, prefers adults.

Formal evaluations at about age three provide various diagnoses: autism, ADHD, aspergers or PDD/NOS.

Some “autistic-like” symptoms or behaviors in hyperlexia 3, which gradually fade.

Echolalia, spinning or other forms of stimming; meltdowns; sensory overload.

Insistence on sameness and resistance to change, rituals.

Obsessive preoccupation with numbers and letters, stacking and lining up things in order.

Preferred play and involvement with adults rather than other children.

Awkward and delayed social skills (often the last to change).

Some hyperlexia 3 symptoms or behaviors that usually differ from autism (ASD).

Good eye contact, the delayed language gradually improves.

Less isolation, gradually increasing pretend play and interaction with peer group.

Seeks and gives affection: “plentiful hugs and kisses to family,” can be empathic.
The following is printed with permission from Phyllis Kupperman, MA, CCC/SPLA, Founder, Center for Speech and Language Disorders, Lombard, Illinois. It is from Hyperlexia: Therapy that Works, A Guide for Parents and Teachers, a publication of the Center for Speech and Language Disorders copyright 2002 and 2013. We are indebted to Ms. Kupperman for her expertise, leadership and contributions to better understanding and managing hyperlexia for parents, teacher and clinicians.

What We Have Learned
After identifying, working with and following several hundred children with hyperlexia over the past 13 years, we have learned the following:

- Children with hyperlexia have a difficult time processing what is said to them, but they are lucky because their language learning can be supported by written language. Once a child begins to understand verbal language, written language can be used less frequently, such as when something new or confusing is introduced.

- English is a difficult and confusing language. Wh-questions (who, what, where, when and why) need to be specifically taught using written and verbal prompts and scripts. Ask the question and give the answer. Teach how to create a narrative or tell a story. Frame experiences or behavioral patterns using written words.

- Rote learning is OK. Routine is good. Computers, videos and books are great teaching tools, since they are predictable.

- Although rote learning is good, a child with hyperlexia also needs to be taught about the flexibility of routine and language.

- Incorporate what each child is interested in into lessons (for example, maps, dinosaurs, cars, plumbing, cartoon characters).

- Punishment does not work. What does work is setting up a positive reinforcement system that will support the behavior you desire to teach.

- Children with hyperlexia have benefited from a variety of education settings and therapeutic approaches as long as their reading abilities are recognized and used to help them learn. Educational programs need to be adapted to fit their language learning differences.

- Each year is different. Parents and professionals need to evaluate programs and interventions based on the child's needs that year.

- Medications, diets and nutritional supplements are not cures, but they may help particular symptoms, such as anxiety, obsessive-compulsive symptoms and attention deficits.

- It is important to script coping language for the children in an effort to decrease negative physical behavior.

- Occupational therapists have lots of good ideas. Consult an occupational therapist trained in sensory integration techniques.

- Social skills are important and need to be specifically taught and practiced. Boys and girls need different kinds of social language groups until the teen years, at which time transgender communication is the issue.

- Some people will never understand, and that is OK. Appreciate those who make the effort.

- “Write, write, write, because the child with hyperlexia will read, read, read.” Susan Martins Miller

- “When in doubt, write it out.” (If it isn’t written, it may not exist.) Canadian Hyperlexia Association

- “When in doubt, write it out.” (If it isn’t written, it may not exist.) Canadian Hyperlexia Association

Dr. Stephen Camarata is professor in the Department of Hearing and Speech Science at Vanderbilt School of Medicine. He draws on more than 25 years of professional experience diagnosing and treating late talkers, and on his own personal experience having a late-talking son.

Q: What are some of the many reasons why a child may be late in beginning to talk?

A: In keeping with the title of the book, “Late-Talking Children: A Symptom or a Stage?,” talking late has quite a number of different explanations. For most toddlers, it is simply a developmental stage they are passing through without long-lasting adverse consequences. Indeed, after the child has “grown out of” the late talking, parents may not even remember much about the worry or anxiety they felt while their child wasn’t yet speaking. For other children, the late talking is a symptom of long-lasting or even lifelong challenges. For example, children with hearing loss may talk late and will often lag behind peers academically as well in their communication skills. And of course, late talking is one of the primary symptoms of autism or autism spectrum disorder (ASD) and for intellectual disability (which was formally known as mental retardation).

Perhaps equally important, clinical science also tells us that talking late is not caused by poor parenting, vaccinations, “environmental toxins,” or a lack of nutrients, such as essential fatty acids or vitamin B12. It is vitally important that parents understand that they did not cause the late talking in their child and that guilt is not only not warranted but also is counterproductive in helping their child learn to talk.

Q: In late-talking children, you detail some of the dangers of false diagnoses and of inaccurate labeling. What can parents do to guard against this?

The best protection against inaccurate labeling is to ask questions - and get answers. For example, when my son was labeled as having mental retardation (now called intellectual disability), I asked the psychologist why she believed that he would learn much more slowly than other children. It turned out that the test she was using was based upon his speaking and listening ability and not actually on his ability to think or to reason. So, the mislabeling of my son was directly due to misunderstanding the diagnostic process for late-talking children.

Many clinicians conduct what I call a “confirmatory” diagnosis. They start out looking for “signs” or “symptoms” of autism and simply confirm a preconceived label without completing a differential diagnosis. That is, they start off with the idea that the late talking is a symptom of autism and confirm that hypothesis if any other signs or symptoms of autism are observed. But this happens even if these “red flag” behaviors are actually relatively common in typically developing children. For example, many two-year-old children throw tantrums, ignore their parents, are shy of strangers, are picky eaters, have large heads, and/or toe walk. No one would pay attention to these “signs” or “red flags” unless a child is also late talking. These traits are then used to justify the autism diagnosis. Evidently, some clinics and some clinicians label all, or nearly all late-talking children as being on the autism spectrum even though we know from population studies that only a small fraction of late-talking children actually have autism.

In order to guard against inaccurate labels, parents should ask the clinician how they arrived on a particular label. More importantly, they should also ask whether this label would be applied if the child were not late talking. Intellectual disability and ASD are both conditions that have severe symptoms above and beyond talking late so that no child should be diagnosed with either of these conditions solely on the basis of their verbal abilities.

I also wish to provide an important caveat. Some late-talking children do indeed have autism or intellectual disability, and I have encountered parents who disagree with this label even when my testing shows that a child’s late talking is actually a symptom of one (or both) of these lifelong difficult conditions. These parents are understandably upset and may attempt...
to argue with the diagnosis. A clinician should always welcome questions, and be prepared to explain how and why a label was generated. Even when parents disagree with my diagnosis, I would never berate them or accuse them of being in denial. After all, if the label is accurate, then the symptoms of autism and/or intellectual disability will persist far after the child has learned to talk and the parents will ultimately realize that the original diagnosis was correct. Also, neither I nor any other clinician is infallible so it is possible that the initial label will subsequently be proven incorrect. Moreover, parents should trust their common sense and instincts and it is a clinician’s job to make sure that they thoroughly explain a label, what it means and how they arrived at the diagnosis.

Q: As you explain in the book, even though early diagnosis of late-talking children and early intervention are very important, there can be pitfalls of early diagnoses. Can you elaborate on what these pitfalls could be?

A: The primary pitfall is evident when the early intervention is based upon an inaccurate diagnosis. In medicine, this simple truth is well understood. It makes no sense to deliver a treatment unless an accurate diagnosis has been made. For example, being thirsty is a symptom of diabetes. But no doctor would treat thirst with insulin (which is often used to treat diabetes) unless a differential and positive diagnosis for diabetes was made. Of course, the thirst could also mean that a person was dehydrated or could arise from any number of conditions other than diabetes. And the thirst may not be a symptom of diabetes or any other medical condition. The treatment must be appropriate for the diagnosis!

Early intervention for autism usually includes techniques designed to increase a child’s motivation to communicate. But these techniques, which may include giving a child a food reward such as a piece of candy when they speak and teaching them to imitate everything an adult says is not a proper treatment for other forms of late talking and may actually derail normal language development. Early intervention is important, but it must be the right kind of early intervention and must be predicated upon an accurate diagnosis.

Also, we know that some forms of early intervention are worthless, no matter how early they are delivered. For example, there is a now discredited theory that autism is caused by vaccinations and there are treatments designed to “detox” the consequences of “vaccine injury.” Because we now know that this “vaccine” theory of autism is not only inaccurate, but actually based upon fraudulent science, this form of “early intervention” should be avoided.

Finally, all intervention for late talking should focus on teaching a child to talk. Although this seems self-evident, far too many late-talking children are forced to put their hands in shaving cream, wear weighted vests, swing in lycra swings, undergo sensory brushing, listen to CDs containing digitally modified music or speech, clap their hands in time to a metronome, blow whistles or bubbles, undergo oral stimulation and all sorts of other activities in the name of “early intervention” for late talking. Worse, some children are strapped into “Rifton” chairs and made to comply with clinician orders, also in the name of “early intervention.” Please do not allow anyone to do these things to your late-talking child in the name of “early intervention.”

Q: What do we know - and don’t yet know - about the relationship between late talking and autism?

A: The overwhelming majority of children with autism or autism spectrum disorder are late talking. But, the overwhelming majority of children who talk late do not have autism. Simple epidemiology tells us this must be so. The incidence of late talking is about one in nine or 10 children in the general population whereas even the most generous estimate of autism indicates that only about one in 50 or 60 children have even one symptom of ASD. It is anyone’s guess whether this one in 50 or 60 includes late talking children who actually have been a misidentified as having an ASD. Regardless, taking these figures at face value indicates that less than one in five late talking children has autism or ASD.
Learning Style
• Fascination with letters and reading
• Self-taught reading (usually occurs before the age of five)
• May attend to words better than pictures
• May decode phonetically
• May learn many sight words
• Processing and learning information through their visual system
• Rote memory skills: through 4K and 5K and beginning of first grade
• Child has to make a pattern himself - needs help to find his way using his strength. Example: When teaching a child how to play the memory game - script out “match” and “no match” then fade scripting.
• During reading and listening to a conversation a child scans to find what makes sense to him - without being specific - talking in circles - also picks out one word and goes with that to answer the question, for example - What is hot? Mom likes to cook. What helps you hear? Music. What helps you see? I like to see animals.
• Requires direct instruction to go from where he is and teach specific skill he does not have
• Information needs to be presented at a slower rate to accommodate for slower processing rate
• Concrete, rigid and literal thinking
• Likes routines
• May have focused interests
• Difficulty picking up incidental language/information from the background

Auditory Processing
• Weakness in auditory processing
• Difficulty following classroom directions

Reading Style
• Reading comprehension generally lags behind decoding ability
• Early reading comprehension for concrete material may be adequate but difficulties arise in higher-level interpretation of abstract and inferential material.
• Typically reading comprehension as good as language comprehension

Expressive Language
• It is difficult for children to generate original expressive language for social conversation and written expression. Their language is stored in chunks according to the situation they learned it.
• Echoed language patterns, chunks of language are used.
• Wh questions - for training of wh questions first teaching correct response, then multiple choice then with faded visual cues.
• Child may ask questions instead of making statements, “Do you want ice cream? instead of “I want ice cream.” Use hyperlexia to teach requests.
• Expressive language may not match what was said to them due to auditory processing
• Difficult time accessing words and information upon request (Birthday)
• Difficulty retelling recent events

Hyperlexia as Seen in the Classroom
• Does not always respond to name
• Weakness in understanding concepts
• Difficulty understanding/answering questions, use of literal comprehension
• Confusion
Hyperlexia as seen in the Classroom, cont.

Social Cognition/Thinking
- Learn as part of a group - these are skills that cannot be learned anywhere else
- Learn how to follow a routine
- Inflexible thinking - needs to be taught how to be interrupted when engaged in a high interest activity, completing a task or when talking about a high interest
- Cueing is critical - look at what the rest of the class is doing to promote independence
- Reduced understanding of nuances of meaning and intention
- Difficulty with nonverbal cues to fully understand what the speaker is saying
- May have tunnel vision focusing on one small detail and missing the entire social situation.
- Difficulty with social reciprocity and conversation

Executive Functioning
Executive functioning skills are those that are required to perform tasks or accomplish a goal. There are two dimensions of executive function, according to Peg Dawson, EdD, and Richard Guare, authors of the book Smart but Scattered, (2009). The first is those that involve thinking and the second are those that involve doing.
- Thinking executive skills include:
  - Working memory
  - Planning and prioritization
  - Organization
  - Time management
  - Metacognition
- Doing executive skills include:
  - Response inhibition
  - Emotional control
  - Sustained attention
  - Task initiation
  - Goal-directed persistence
  - Flexibility

Sensory Regulation
- Children may be hyper or hypo active
- Almost always occupational therapy is needed. Physical experience is intertwined with neurological.
- Increased anxiety

Executive Functioning
Useful techniques, strategies and activities for doing early intervention therapies with those who have hyperlexia 2 or 3

Children with hyperlexia 2 or 3 often have difficulty learning by traditional methods. It is important to remember that those with hyperlexia are processing language through written form the way many process language through auditory channels. Those with hyperlexia find conversation difficult to process. Using a strength-based approach that focuses on written language to bridge that gap by pairing the written language with the verbal is necessary. How can one teach other concepts and social engagement, while managing anxiety and negative behaviors? The following guidelines will help you better engage the child’s potential through shared learning experiences.

1. Use diverse sensory activities as part of the learning opportunity.

The more ways the brain can take in information, the more likely it will be able to use that information. Those with hyperlexia 2 or 3 will not be as successful learning by listening to a lecture. They will more likely find success learning from reading, participating in activities or watching videos modeling desired behaviors. Many of these children process information more completely when movement is part of the activity. These activities often have a secondary benefit in reducing stress and negative behaviors. Regardless of the activity repetition in conjunction with a diverse sensory experience is needed for these children to master of new skills.

2. These children tend to have excellent memory and outstanding pattern recognition skills. So, as Dr. Treffert would say, “Teach to the talent.”

Children with hyperlexia aged two or three often show increased skills in the areas of memory and pattern recognition. They often find it much easier to memorize lists such as president, states and capitols or factual information about a particular interest. They also tend to do well in pattern recognition activities, such as music, math or reading. This means the desired information you wish the child to learn is visible in their environment and they will process it. They often learn it on their own with little formal instruction. That means the teacher should bring the words and engagement to the interaction and create a social experience within these activities. The emphasis must be on the shared experience.

3. Those with hyperlexia often feel the need for routine.

Children with hyperlexia 2 or 3 often can be rigid thinkers and can get stuck. This allows the teacher to use these routines to give the child the language they need to navigate their day. Creating a visual schedule, if/then cards and power cards can communicate more clearly the routine a confused child is expected to follow and what the day will look like. The routine itself becomes a mode of learning by providing repetitive situations where appropriate language for the situation can be practiced over and over. Remember, because of their unique learning style, written routines are the only way the child has to understand the day. That routine means safety, consistency and confidence in understanding what is to come. Taking that away or changing it abruptly without being able to communicate to the child what is happening can be very overwhelming. This is why preparing the child for change is necessary to allow the child to feel safe in their environment.

4. Children with hyperlexia can often have hyperfocused interests.

It’s important to remember when “teaching to the talent” start where the child is. These special interest areas are a great place to start pairing verbal language with the activities the child already enjoys. This gives the child the language that she/he loves and shows the child the value of
being able to express what delights them. This makes the use of language reinforcing in and of itself.

5. Compassion and creativity will be your greatest allies.

All behavior is communication. It is the role of the professional to make the connection between the behavior and what the communication attempt is trying to convey. Children with hyperlexia can often become stressed and overstimulated. This can lead to negative behaviors. These behaviors are a triggered response to and not deliberate attempts to be “in control” or “manipulative.” These kids need to be monitored by others and action needs to take place to provide stress relief before the child reaches a full meltdown. When these children escalate/become stressed, their limited ability to understand verbal language becomes even less accessible. It is urgent that activities be made fun, and educational curriculum to help those struggling with hyperlexia 2 or 3.

It is necessary to have an assessment done by a professional to get a sense of what skills and target goals are appropriate to begin working on for the individual’s particular level of need. This allows one to know what information should be made available in the learner’s environment. This information can change as the learner develops new skills and needs to be monitored and updated to maximize learning potential.

These guidelines provide a firm structure to build a diverse and rich learning environment. This will promote the power of learning, the recognition and reward of social engagement, keep behaviors conducive to developing new skills and ensure progress towards goal achievement. This manual looks to incorporate these guidelines into a therapeutic and educational curriculum to help those struggling with hyperlexia 2 or 3.

What target items do you teach the child in order to get them to progress quickly? This is one of the most frequent questions asked by parents. They are surprised to hear that skills can be taught without specific items or tasks out of context. The most important role you can take is creating a space where learning is free to occur. It is less about demanding the child participate in repetitive busy work and more about creating an environment where the child can show what they know and understand. The brain cannot be stopped from learning when the environment meets the individual’s specific learning style, whether the child is diagnosed with hyperlexia, autism, both, or neither.

How do we create a suitable environment that fits the individual learning style and promotes skill development?

The first step is to observe the child when they are interacting with the world and no one is placing demands on them. Are they hyperactive, tired and sluggish or in that “Goldilocks range” where everything is just right? This is often referred to as a child’s arousal level. Learning occurs easiest when we are at the appropriate arousal level for the specific skills or tasks we are hoping to learn. Different activities require different arousal levels. High arousal is great for sports and active informal social engagements, but isn’t great for quiet reading or researching ideas. We lose attention and focus if our arousal state is too high and the activity calls for a more calm state. There will be a lot of fidgeting and impulsivity during these situations. Low arousal levels are essential when it comes to relaxation and preparing for sleep, but cause great difficulty if it is time to attend to instructions or participate in a group discussion. We lose motivation for the interaction if our arousal state is too low for the demands of the activity or we lack the energy to engage. It is important that we observe the child before we engage to see where the child is at and modify our interactions based on the child’s current level. It is important to have a working knowledge of activities that get the child to the desired state of arousal that fits the learning opportunity in which we wish the child to participate. One must also recognize the negative triggers that will pull the child out of the states we are hoping to achieve (see section on sensory activities). The learning partner must continually monitor the child’s arousal levels and adjust the environment throughout their interactions to maintain the child’s optimal learning state. Only present the child with targeted goal activities when the child’s arousal level is appropriate for the activity. This prevents negatively pairing the activity or desired learning activity with the individual’s inability to participate due to their arousal level. This can lead to the learner developing a sense of helplessness and can cause them to withdraw from the entire learning process even in areas they previously haven’t struggled. The entire purpose of the learning opportunity with the child is to create a shared engagement that the child will participate in again. That means keeping the engagement fun. This positively reinforces learning and engagement, rather than placing the emphasis on quality and production in the early stages of learning a skill or subject. A good rule to remember is 80 percent of the time you are engaged with a child should be focused on strengthening the skills the child is gaining confidence in and 20 percent of the time should be helping the child stretch his abilities into developing new skills. You may need to begin this process by prompting fully. However, as the activity is repeated, fading those supports is necessary for the child to grow towards independent performance. Remember, we should be less interested in teaching a skill and more interested in instilling a love for learning.

Create a positive learning environment making sure there are suitable activities containing the targeted goals easily accessible to the child.

It also helps the generalization of targeted goals if there is a variety to the activities in which the targeted goals are presented. This means to make sure letters are available if the goal is to learn letter recognition. You may have an alphabet strip on the child’s wall, magnetic letters on the refrigerator and books or games with letters as a focal point.
Creating an Environment Conducive to Learning, cont.

Books and other reading materials, as well as, being read to should be present throughout the environment if the goal is reading. Remember to always pair the auditory with the reading to help make those connections. Social engagement groups and opportunities, social stories about engagement and video modeling of social interactions need to be available to the child if socializing is the goal. The closer the activity can be to the actual event, the more likely the child will be able to transfer the information successfully to the actual real life event.

Recognize what the child is naturally gravitating towards in their environment and using that to initiate a learning opportunity.

Eighty percent of the time the focus should be supporting and developing the child’s strengths or what they are being drawn to in their environment. The other 20 percent of the time should be building off of those strengths to promote new learning. The learner should spend the majority of their time with a learning partner going over the information they already know and becoming confident and proficient in those activities. This deepens the individual’s understanding of that information and develops a sense of ownership in the learning process, while positively reinforcing the behavior of learning. The child learns how to learn from their environment, as opposed to being drilled on repetitive activities that have no apparent meaning to the learner. This ratio 80/20 ensures that the individual will value the new information as it reinforces the individual’s strengths. This also reduces stress from being overwhelmed by new information and then having the individual shut down because their brain can’t process the new information effectively.

These three steps can go a long way to producing a learning environment that is fun, supportive and stress-free. While these criteria are great, the best benefit of creating an environment conducive to learning is the increase in the likelihood that the learner will meet their targeted goals and develop functional skills with fewer behaviors and less frustration for the learning partner. This also changes the focus from skill drilling to developing a love for learning and shared learning engagement. This rids the process of tricky reinforcement schedules, having to dish out punishment for noncompliance and the stress of quality and production based learning strategies, which are often ineffective for these learner’s unique styles of learning. This practice helps empower the learner and focuses on a learner centric strength-based model that can enrich the engagement of the learning experience for both the learner and learning partner.

Becoming an Effective Learning Partner

One cannot be a teacher unless teaching occurs and the only way to be effective in helping those with hyperlexia is to learn more about the individual you are helping, and then you teach them. While many people attempt to be good teachers, the best are adept at creating a supportive enriching environment (a setting where learning occurs with minimal emotional or physical distress). Two characteristics are present in those who show exceptional skills in helping this population — compassion and creativity.

First, they have the compassion to understand the behaviors displayed are symptoms of the disorder, and are what’s keeping the learner trapped in their rigid and frightening world. These people are struggling with some severe cognitive disabilities, and are not intentionally or deliberately trying to make everyone’s life miserable. They are confused, afraid and misunderstood. Take these characteristics and add under supported in most environments and you have a recipe for disaster. Successful learning partners have the compassion to create a space where the child feels supported and uses any failures as an enriching experience. They have an understanding of the learner’s disabilities and limitations, and never demand that they function outside their ability. They start where the learner is at and engage the learner with materials and activities appropriate for their skill level. They focus on relationship development as a means of engagement and not compliance for a task. They are prepared with plans to reach the child’s goals, but recognize the need to abandon those plans to let the child lead when a natural learning opportunity arises. They support the child when negative behaviors arise and there is the need to help the child maintain emotional stability.

Second, learning partners need to be creative. Remember what it’s like to be a child and use play as a foundation to learning and social engagement. Be creative in turning the learner’s interests into learning opportunities. Have the imagination to create play scenarios to engage the learner socially while targeting the appropriate goals. Have the ability to redirect learners during times of stress and maladaptive behaviors by creating time to relax and engage in activities that decrease stress before there is a need to escalate. This is important because teaching self-regulation is a constant throughout the developmental process. The child must learn new coping skills as the demands of the environment become more challenging and continue to learn more sophisticated coping strategies.

These characteristics are great from a philosophical standpoint, but what is done during the actual time spent with a child that can be helpful? Here is a helpful format to prepare you for becoming an effective learning partner for those who struggle with the learning process. Especially, those who have been diagnosed with ASD or hyperlexia 2 and 3.

Before you can even start teaching you must do this, as it sets the stage for working with an individual. You must develop a relationship in which the child trusts you enough to come with you on this journey of learning. That means observing the child’s performance through the lens of their ability, not your expectation. You must be the one that backs off demands as soon as the child shows signs of struggling with the target activities. The child will lose their trust if you force an activity that goes beyond their ability to participate in that activity. Remember that ASD and hyperlexia are not consistent from day to day. Many children will be able to function at higher levels on some days more than others. That does not mean the child is deliberately trying to undermine your authority. It just means they are displaying more symptoms of their diagnosis and they cannot help their behaviors.

One way we engage young children and assist them through the stages of development is by incorporating the strategies developed by Stanley Greenspan’s Floortime. Floortime is precisely that: a 20 to 30-minute period when you get down on the floor with your child and interact and play. How can playful interactions help your child master the milestones? The answer has to do with the nature of the interactions. Certain types of interactions with other people promote a child’s growth.

Human relationships are critical to a child’s development. Human beings seem to be created to learn and grow in the
context of relating to other humans; the brain and the mind simply don’t develop without being nurtured by human relationships. Without relationships, self-esteem, initiative and creativity do not grow either. Even the more intellectual functions of the brain - logic, judgment, abstract thought - don’t develop without a constant source of relating.

Much of our best early learning happens through relating to other people. An infant learns about cause and effect in part by dropping a spoon and watching it hit the floor. But the child learns far more, and far earlier and more solidly, by smiling and getting a smile back. Later learning occurs by having mommy pick him or her up. The pleasure that results from this learning is far more intense, the subtleties in mommy's response far more varied. This kind of rich and intense response, which becomes deeply etched in the child’s emotions, is possible only in human interactions. The child then applies this emotional lesson in causality (“I can make something happen”) to the physical world. That the emotional lesson comes first and is the basis for the cognitive lesson is opposite to the traditional view of cognition and learning. This insight is essential for mobilizing intellectual and emotional growth in children with special needs.

Through interactions, one can mobilize a child’s emotions in the service of learning. Emotions make all learning possible. By interacting with a child in ways that capitalize on emotions - by following interests and motivations - one can help the child climb the developmental ladder. One can help the child want to learn how to engage in a dialogue. One can inspire the child to take initiative, to learn about causality and logic, and how to act to solve problems even before the child speaks and moves into the world of ideas. In helping link emotions to behavior and words in a purposeful way, instead of learning by rote, one enables the child to begin to relate to you and the world more meaningfully, spontaneously, flexibly and warmly. That provides a firmer foundation for advanced cognitive skills.

Children with special needs require a tremendous amount of practice in linking their intent or emotions to their behavior and then to their words. Like a right-handed person learning to throw a curve ball with the left hand, one needs to practice the skill over and over to master it. Floortime is a child’s practice time. Each time you get down on the floor and interact - spontaneously, joyfully, following the child’s interests and motivations - you help build that link between emotion and behavior, and eventually words. In doing so, one moves forward on the journey up the developmental ladder.


Goals for Being an Effective Learning Partner, cont.

Goals for Being a Great Play Partner

- Use supportive body posture (face-to-face or comfortable for the child)
- Read the child’s cues (behavior, language, gestures, relating style, rhythms)
- Follow, then help. Expand the child’s lead in a non-coercive, playful and encouraging manner.
- Describe and identify play themes, but don’t turn the session into a teaching/lecturing session.
- Let the child know you are supportive and caring.
- Know when to talk, when to be quiet/observant.
- Sense the emotional needs of the child.
- Treat what the child is doing as purposeful.

Try to avoid these practices

- Prompting too much, not waiting for child to open circles.
- Following the child’s lead, but not being engaging
- Teaching instead of having fun interacting
- Not rewarding/reinforcing interactions/language


Goals for Being a Great Play Partner as Found in Play to Talk
Step One: Observation
Both listening to and watching a child is essential for effective observation. Facial expressions, tone of voice, gestures, body posture and words (or lack of words) are all-important clues that help you determine how to approach the child.

- Is the child's behavior relaxed or outgoing?
- Is he or she withdrawn or uncommunicative?
- Is he or she bubbling with excitement?
- Is the child a real go-getter?

Step Two: Approach
Once a child's mood and style have been assessed, you can approach the child with the appropriate words and gestures. You can open the channel of communication with a child by acknowledging the child's emotional tone, then elaborating and building on whatever interests the child at the moment.

Step Three: FOLLOW THE CHILD'S LEAD
After your initial approach, following a child's lead simply means being a supportive play partner who is an “assistant” to the child and allows the child to set the tone, direct the action and create personal dramas. This enhances the child’s self-esteem and ability to be assertive, and gives the child a feeling that “I can have an impact on the world.” As you support the child’s play, the child benefits from experiencing a sense of warmth, connectedness and being understood.

Step Four: EXTEND AND EXPAND PLAY
As you follow the child's lead, extending and expanding a child's play theme involves making supportive comments about the child's play without being intrusive. This helps the child express their own ideas and defines the direction of the drama. Next, asking questions to stimulate creative thinking can keep the drama going, while helping the child clarify the emotional themes involved (e.g., suppose a child is crashing a car. Rather than ask critically, Why are those cars crashing? You may respond empathetically, those cars have so much energy and are moving fast. Are they trying to get somewhere?)

Step Five: CHILD RESPONDS AND ENGAGES
As you open the circle of communication when you approach the child, the child responds and engages, when the child builds on your comments and gestures with comments and gestures of their own. One engaged moment flows into another, and many responses may be shared in quick succession as you interact with the child. By building on each other's ideas and gestures, the child begins to appreciate and understand the value of two-way communication.

Step Four: EXTEND AND EXPAND PLAY
As you follow the child's lead, extending and expanding a child's play theme involves making supportive comments about the child's play without being intrusive. This helps the child express their own ideas and defines the direction of the drama. Next, asking questions to stimulate creative thinking can keep the drama going, while helping the child clarify the emotional themes involved (e.g., suppose a child is crashing a car. Rather than ask critically, Why are those cars crashing? You may respond empathetically, those cars have so much energy and are moving fast. Are they trying to get somewhere?)

Step Five: CHILD RESPONDS AND ENGAGES
As you open the circle of communication when you approach the child, the child responds and engages, when the child builds on your comments and gestures with comments and gestures of their own. One engaged moment flows into another, and many responses may be shared in quick succession as you interact with the child. By building on each other's ideas and gestures, the child begins to appreciate and understand the value of two-way communication.

Goal One: Encouraging attention and intimacy. As your child learns to remain calm while exploring her world, she will also be developing an interest in you because you are the most important person in her world. You both will work on maintaining mutual attention and engagement. Your goal is to help your child tune in to you and enjoy your presence (this goal contributes to milestones one and two).

Goal Two: Two-way communication. Next you will help your child learn to open and close circles of communication, at first with subtle facial expressions and a gleam in the eye, a dialogue without words. By creating a gestural dialogue, you build interaction, logic and problem solving. Your task is to encourage a dialogue, to help your child use his affects or emotions, hands, face and body to communicate wishes, needs and intentions. Over time, you try to help your child open and close many circles of communication in a complex, problem-solving dialogue (this achievement correlates with milestones three and four).

Goal Three: Encouraging the expression and use of feelings and ideas. Your child can now begin learning to express feelings or intentions in words and pretend play. Your goal is to encourage dramas and make-believe, through which your child can express her needs, wishes and feelings, and gradually to help her express these in words (this goal corresponds with milestone five).

Goal Four: Logical thought. Finally, you can help your child link his ideas and feelings to come to a logical understanding of the world. Your goal is to encourage him to connect his thoughts in logical ways (this ability corresponds to milestone six).

Sensory integration and sensory play have been the most successful ways to keep a child engaged and to keep negative behaviors at a minimum. Creating a sensory diet for an individual is about providing a varied sensory rich environment that enhances the relationship between the individual and their surroundings in the way they were made to engage with it. Helping someone develop a knowledge base is useless if they are unable to navigate their environment with confidence and proficiency. Many cases see the individual unable to even tolerate their environment, let alone navigate it. It is a mistake to not give as much attention to the sensory activities as any other area of socialization, communication, academics or self-regulation. Being able to draw on your sensory system is essential for the brain to decipher the relevant information from the environment in learning situations. It sets that stage for most social interactions, plays a key role in self-regulation and being able to manage negative behaviors during times of stress. Besides managing behaviors, sensory dysfunction can be a major source of anxiety in itself. Thus, causing an individual’s presenting symptoms (negative behaviors) to be more pronounced (increasing in intensity, frequency and duration). Learning partners should engage in the sensory activities with the learner. It is a great way to strengthen that relationship and bond with the learner. It allows the two of you to come together and focus on a shared activity. You can create scenarios where the two of you can come together as a collaborative problem-solving team. It also allows the learner to become mindful of how their body engages in their environment and begins to give them a shared language to express how their internal processes work. For example, they may begin to recognize where they feel stress and what they can do to stop it from overwhelming them. They might become more aware of when they need to use the bathroom, feel when they have injured themselves or be able to let someone know when they are not feeling well.

**Sensory Play**

**Enriching Activities that ‘Teach to the Talent’ of the Child with Hyperlexia**

1. **Letter Match**
   A. **What you will need.**
   - One pack of alphabet flashcards
   - Child’s alphabet book
   B. **Directions**
   - Lay out a couple of the alphabet flashcards that correspond to the pages in the book.
   - Have the child match the letter to the corresponding letters of the alphabet book.
   - Praise child when they match the target letter.
   C. **Progressing as child gains proficiency.**
   - Match lowercase letters with uppercase letters.
   - Try matching all the letters of a word in a book.
   - Match letters to toys that start with the target letter.
   D. **Variations**
   - Use the child’s finger as a pencil and trace the letters with the child’s hand.
   - Fish letters out of a box or bucket and then find the corresponding page in the alphabet book.

2. **Letter Search**
   A. **What you will need.**
   - One pack of alphabet flashcards
   - Five-foot by six-foot space
   B. **Directions**
   - Start with only a couple cards while the child is learning the point of the game.
   - It is often best to start with the beginning of the alphabet.
   - Lay a couple cards on the floor.
   - Ask the child to stand on the desired card.
   - Say nothing if the child stands on the wrong card. Simply repeat the instructions.
   C. **Progressing as child gains proficiency.**
   - Increase number of cards on the floor.
   - Add lowercase letters.
   - When child has letters mastered move on to simple words.
   D. **Variations of the same game.**
   - Use a flashlight or laser pointer to identify letter.
   - Pick an action to perform on the way to the target card. Example: “Hop over to the letter “A.””
   - Try throwing a bean bag on the target letter.
   - Put a paperclip on the flashcard and make a fishing pole with a magnet and fish for the target letter.
Enriching Activities that ‘Teach to the Talent’ of the Child with Hyperlexia, cont.

What's Missing?
A. What you will need.
   • A set of alphabet letters (magnets, flashcards or blocks).
B. Directions
   • Spell a simple word three or four letter word but leave one letter out. Start using all uppercase letters.
   • Start by leaving out the first letter.
   • Then move on to the other letters.
   • Display a couple letters for the child to choose from.
   • Have the child choose the correct letter.
   • Praise child for correct answer.
C. Progressing as child gains proficiency.
   • Increase number of cards the child can choose from.
   • Increase the difficulties of the words being used.
   • Add lowercase letters.
   • When child has letters mastered, move on to simple sentences with missing words.
D. Variations
   • Have the child set the game up for you to do.
   • Many spelling games on children’s electronic devices have similar games.

Labeling the World
A. What you will need
   • Three by five notecards
   • Marker
B. Directions
   • Make cards to label the objects in your home. (Example: oven, door, television, chair, toys).
   • Place the card near the appropriate objects in the home, and do nothing for two to seven days.
   • Make a second pair of cards that match the first set.
   • Have your child venture around the living space and match the cards.
   • Praise child when child has correct responses.
C. Progressing as child gains proficiency.
   • Remove initial cards and have the child match the word directly to the object.
   • Label increasingly more difficult objects as the child shows an increase in understanding.
D. Variations
   • Have the child set the game up for you to do.
   • Many spelling games on children’s electronic devices have similar games.

Matching Letters to Objects
A. What you will need.
   • A set of alphabet letters (magnets, flashcards or blocks).
   • Some objects to match.
B. Directions
   • Set out an object in front of the child.
   • Place one or two uppercase letters in front of the object.
   • Ask the child to pick the letter that the object starts with.
   • Praise child for correct responses.
C. Progressing as child gains proficiency.
   • Set out more letters to choose from.
   • Ask child to label the letter the object starts with no letters present.
   • Give the child a letter and have them search for an object that starts with that letter.
   • Ask the child to find an object that starts with a particular letter.
D. Variations
   • Match the object to the letter.

Can You Find What You Hear?
A. What you will need.
   • A set of alphabet letters (magnets, flashcards or blocks).
B. Directions
   • Lay out two to three uppercase letters on the floor.
   • Make a letter sound.
   • Ask the child to find the letter that made the sound you made.
   • Praise the child for correct responses.
C. Progressing as child gains proficiency.
   • Increase number of letters on the floor.
   • Use lowercase letters.
   • Hide the letters and have the child search for it.
   • Move up to blended letter sounds.
   • Do simple two to three letter words.
D. Variations
   • Use a bean bag to have the child identify the letter by throwing the bean bag at it.
   • Use a flashlight or laser pointer to identify the letter.
   • Play in the car, using billboard signs to look for the letters you sounded out.
Verb Match
A. What you will need.
• Set of verb word flashcards and corresponding action pictures.

B. Directions
• Place the words on the floor, table or around the room.
• Give the child an action picture.
• Ask them to match the picture to the corresponding word.

C. Progressing as child gains proficiency.
• Use more difficult words.
• Match words to pictures.

D. Variations
• Match verbs with objects used to perform the action. (Example: Use the word brush and match it to a comb or toothbrush or find a toy if the word is play).
• Do colors and emotions pictures as well.

Verb Charades.
A. What you will need.
• Set of verb word flashcards.

B. Directions
• Give the child the verb word card.
• Have them act out the verb.
• Others try to guess the action.
• Praise everyone for correct responses and participation.

C. Progressing as child gains proficiency.
• Set up teams.
• Use increasing more challenging words.

D. Variations
• Use emotions
• Community helpers
• Professions
• Animals

It’s in the Bag
A. What you will need
• Two large Ziploc bags
• Shaving cream
• Food coloring
• Duct tape

B. Directions
• Spray some shaving cream into one of the Ziploc bags.
• Add a few drops of food coloring.
• Get most of the air out of the bag.
• Seal the bag and cover the end with duct tape to prevent leaking.
• Place first bag in second bag with the top of the first bag at the bottom of the second bag.
• Again get most air out seal bag and duct tape the end to prevent leaking.
• Use finger to write on bag.
• Then shake to erase and start over.

C. Progressing as child gains proficiency.
• Start with uppercase letters.
• Lowercase letters.
• Simple short words.
• Longer more difficult words.

D. Variations
• Fill bags with sand, olive oil or dish soap.
1. **Writes lists, rules and schedules**

**Write lists**
- List to sequence a locker routine
  - Hang backpack
  - Gloves off
  - Hat off
  - Unzip jacket
  - Take off jacket
  - Hang up jacket
- **List activities within a subject area - mini schedule**
  - Read to self - 10 minutes
  - Write spelling words
  - Questions one to five, page 39

**Rules**
- Post written rules - more effective than verbal reminders
  - Hands to self
  - Sit in chair
  - Quiet mouth
  - Eyes on speaker
- **Post-it note to write expectation for a quick fix**
  - First spelling sheet then iPad

**Schedules**
- Breakdown of the day presented at the child’s level of understanding ranging from picture paired with written word to written word only.

2. **Offer choices**
- Provide a choice board with a student’s preferred activities - student can choose an activity to do after request classroom tasks.
- Often a child has a high interest area, if they can see it on the list, they can often wait and pay more attention to the other activities.
- Lists can be used to negotiate choices.

3. **Use written models**
- Pair oral instruction with written and visual models
  - When teaching vocabulary pair written word with picture.
  - Match a descriptive sentence to a picture.
  - New information - visually and orally in all subject areas.
  - LABEL EVERYTHING!

4. **Cloze sentences**
- Use patterned questions and answers.
  - Use patterned and language books - Five Little Ducks, Five Little Monkeys, Polar Bear Polar Bear, Chica Chica Boom Boom
  - Teach how to change learned patterns by filling in the blank of the sentence
    - I see a dog.
    - I see a cat.
    - I see a ____.

5. **Use scripts and models and ask the child to repeat**
- When teaching a social expectation, scrip out exactly what you want the child to say, “Do you want to play 4 score?”
- When playing structured games, such as UNO, script out the question, “Do you have a _______ card.”
  - “No, pick a card.”
  - “Yes, here is a _______ card.”

**As the child learns scripts and models the scripts can be faded.**

**New more flexible models can be introduced, supported by written cards if necessary.**

6. **Provide demonstrations rather than explanations**
- Language comprehension can be difficult - the auditory message is often confusing. Support an activity by verbalizing, modeling and scripting the direction for an activity.
  - Classroom direction - Write your name on your paper.
  - Demonstrate writing your name on the paper.
  - Provide the written direction - “Write your name on the paper.”
  - Verbalize, “Write your name on your paper.”
- Another example is teaching categories. Show the child how to put all the fruits in the container labeled “Fruits” and all of the vehicles in the container labeled “Vehicles.” After the child understands the task then verbally give the direction. Later, vary the task by using different or more categories.

7. **Teach one way and reverse the process**
- Children who learn in patterns do not always generalize knowledge or information across contexts C became an expert on sequencing pictures and writing a sentence about the story but when asked what happened first in the story he could not explain. We realized we have to teach him how to retrieve all that information from his memory. To teach this, we would support with verbal, scripting and picture. Then fade the picture and then the written script. Eventually verbalize the question and the student responds verbally.

8. **Use rote learning and frequent repetition**
- For example: He not only learned the state and the capital but what highways ran through that state. This strength could be used in a classroom. For example when another student would tell that they traveled to another state, to share and point out what highways he may have taken to get there.

---

**Useful technique, strategies and activities for the classroom, cont.**

**Useful technique, strategies and activities for the classroom, cont.**
9. Write questions and write answers (practice by providing correct answer, then choices, then fade visual)

For students who learn language through patterns (Gestalt processing), the acquisition of question forms is usually difficult. These children search for keywords they know and form a response often missing the wh words at the beginning. When asked, “What is hot?” they may say, “Mom is cooking.”

- Use the wh question card packs for training rote answers to questions.
- Test for generalization by presenting a novel question.
- The child may want an adult to write their answer.
- Directly teach more abstract and higher level questioning.
- Use this strategy to teach across subject areas until the child learns the pattern.

10. Build background information

- It’s important to provide students with visuals and background information. They have difficulty attaching words to their experiences and telling about past events.
- Make a book about experiences with photos.
- Keep a journal with patterned entries so the child can write or dictate.
- Narrate or write about the child’s experiences as it happens. Provide the words for the child.
- Preteach to aid in comprehension across content areas.
- Help the student “connect the dots” and make the associations.

11. Use high interest activities

- Build on the interest the child has.
- Write down what the child says, and help the child create a narrative or description.
- Script conversations about the topic.
- Use their topic in games and activities - sorting animals into farm animals and zoo animals.

12. Teach reading comprehension directly

- These abstract concepts are difficult and need to be directly taught:
  - Pronoun references
  - Figurative language
  - Inferences
  - Motivations/reactions of the characters
  - Imagining events of the story
- Read aloud and stop frequently to support comprehension.
- Directly teach the main idea and graphically show how the details fit in.
- Create written summaries after each section of the book.
- Make sure the child understands questions (ask question model answer).
- Use a predictable format of comprehension activities (i.e. story grammar marker).

13. Use social stories and social rules

- Child is often unaware of subtle social cues of others.
- List expected rules for a variety of situations and context areas.
- Write social stories to specifically teach expected behaviors in a variety of settings.

14. Use a positive visual reinforcement system

- It is important to tell them what you want them to do because they may not be able to think of an alternative behavior if they are just told what not to do.
- Using a chart with the desired behavior written on top - reward child every time the child does the behavior but never take the reward away.

References


Success Stories

Among the over 250 “I’ve got a son or daughter who…” e-mails and letters I regularly receive are a generous number of “success stories” where follow-up over a sufficient amount of time makes it possible to conclude that indeed what may have appeared as “autism” (hyperlexia 2) turns out to be instances where the “autistic-like” symptoms were just that “autistic-like” — putting the child, often now adult, into the hyperlexia 3 category. Here are several examples:

AC
18 month old was reciting the alphabet and reading full sentences at age two. He was counting to 100 in English and 20 in Spanish. By 2½, he memorized all the states and capitals. He had socialization issues with strangers, but not family. He was given a diagnosis of autism spectrum disorder at age three.

At age six his autistic traits “melted away,” no echolalia, stacking and lining up rituals disappeared. Verbal skills and socialization have improved. Phobias disappeared and eye contact is excellent. Parents read the hyperlexia article several years earlier which gave hope their son would get better because he so resembled hyperlexia 3. They are now believers in that theory.

CS
At age two learned the alphabet in several hours using magnetic letters in the bath. Insisted on seeing the credits in movies at age two. Figured out lower case letters at age three. Could decode cursive writing at age three to four. A phenomenal memory including hotel room numbers for years. Late to speak and diagnosed with autism. Was in the top three to four percent in high school and made the honor roll. Now a freshman in college. Affectionate and empathic. Good sense of humor and loves puns. A gifted writer. Top Spanish student in high school who visited Spain speaking in Spanish in a very polished way.

GM
At age nine months was fascinated with FBI anti-piracy warning on DVD’s. Baby blocks lined up like Scrabble board in alphabetical order. Delayed speech. Received an autism diagnosis at age two. He was reading all the labels of all the over-the-counter medications while being wheeled down the drug store aisles. Mother was convinced her child was not autistic; he was not withdrawn, had good eye contact and was very affectionate. At age three a speech and language therapist used the reading ability as an available teaching and learning tool.

Gradually the autism “faded.” He took up music and tae kwan do. His mother reported, “He had friends, went to the prom, played in two rock bands and most importantly, was — and is — happy. He received two merit scholarships and just finished his first year in college on the Dean’s list.”

He is now 19 years old pursuing a music degree in college; was on the Dean’s list as a freshman. Plays in two rock bands writing and recording a solo album. Highly communicative; has a small but close network of friends. Has exceptional recall. Is a poignant lyricist.

Mother writes: “My son is my hero. He is aspiring to achieve his dreams and looks like he is on a successful track in doing so. Teaching him language by way of reading gave him the foundation for learning and mastery of dialogue — both written and spoken. I encourage all parents who have inking that hyperlexia is relevant to their child — as opposed to a different diagnosis — to exhaust all resources for information.”

NS
Began reciting the alphabet at age 23 months, seeing letters and numbers everywhere. Given a diagnosis of autism at age 12 months because he never pointed, clapped or waved. However before age two he knew about 100 words and was putting words together. He was happy and loved to learn. While he did tend to play alone he did imitate and relate to children his age. Hugs and kisses to family were plentiful.

Six months later, mother reported her son had caught up to age level with his language. He was social and affectionate but there was little pretend play. He loved playing with his cousins and other children. At age 2½ months, he was counting and beginning reading.

On follow-up in second grade, NS was doing very well. He did learn to read early which provided great success academically. He now can tell you any country in the world on a map by its shape. He continues to have a excellent memory. He recited all the presidents to the school board in kindergarten and recited the Gettysburg address to his classmates in second grade. He has had special interest in math and the school allowed him to go to the next grade for math. Recently he has gained a love of poetry and writing.

AS
Early reading at age two but late talking 4½, exceptional memory and some passing autistic traits with more social and interactive personality. Less time spent on “ inward” activities and prefers to interact with family or other children. Exceptional memory persists, knows license plate numbers of all the homes and visitors in the community; on hearing a few seconds of 196 national anthems can identify the country. Knows all the presidents in order, their quotes, capitals, currencies of all countries and recognizes alphabets in 18 languages. Speech is developing nicely. AS is age five now and the family is waiting to see even more socialization with peers. He is very affectionate with family and mood is excited, playful and interactive for age.

The family writes: “I cannot thank you enough for putting time and effort into research with kids who fit into hyperlexia III and are at risk for misdiagnosis. We have always remembered your very wise words ‘target the symptoms and let the natural socialization does not come as naturally to him as some of his peers but that is slowly improving as well. He continues to have an amazing memory, which he feels will be an asset as he achieves his vocational goal of becoming an attorney. His mother’s description in 2012 says it best: “My eldest Dude has type III. At 14 he has finally come into his own… he seems to have finally caught up with himself, to have balanced out. It seems that he has the discipline, experience or maturity for his obsessions to become hobbies now. And, yes, he is more and more neurotypical every day.”

Success Stories, cont.

My first contact with RM’s parents was when he was 12 years old and they felt “hyperlexia” best described RM when they “stumbled” on that information on the Internet, “which was finally a way to describe our son.” RM had difficulty forming peer relationships but would impress adults who often found him charming and mature beyond his years. Visitors to the local aquarium in which he had a deep interest were impressed with his extensive knowledge about marine life. All of his teachers were also very impressed with him. No formal diagnosis seemed to fit although Asperger’s was sometimes mentioned.

RM eventually became interested in languages and cultures. At age 10, he was speaking English and German and was functionally fluent in Spanish and learning Chinese. At age 16, he spent one month in Peru and China and those trips went very well. Some of his obsessions had turned into hobbies. He was involved with music and tennis.

On the last report from his parents in 2016, RM was a senior in high school with politics, law and criminal justice his favorite subjects. He completed an internship in an organization particularly interested in equal justice endeavors about which he feels passionately.

He has applied now for university entry with a major in international politics. He is hoping to be a part of the rowing team. Progress from those early days has been good although socialization does not come as naturally to him as some of his peers but that is slowly improving as well. He continues to have an amazing memory, which he feels will be an asset as he achieves his vocational goal of becoming an attorney.

His mother’s description in 2012 says it best: “My eldest Dude has type III. At 14 he has finally come into his own… he seems to have finally caught up with himself, to have balanced out. It seems that he has the discipline, experience or maturity for his obsessions to become hobbies now. And, yes, he is more and more neurotypical every day.”

Darald A. Treffert, MD
FIRST-PERSON ACCOUNT

I have many grateful “success story” e-mails from parents telling their experiences with their child, teachers and the others on their journey beginning with their child who read early and ending, finally, with the proper designation “hyperlexia 3” and a very positive outcome. The journey was a bumpy one, with a diagnosis of “autism” along the way, and difficulties finding the right educational path with schools and various IEPs.

This is a first-person account from a 15-year-old girl who found along the way that “hyperlexia 3 fit her to a T!” and she eventually “grew out of her difficulties” and is doing very well. She was relieved to “find out the truth about myself, especially hyperlexia 3” and wanted to raise awareness about hyperlexia in all its forms in order to “educate everyone, including professionals, about hyperlexia and the dangers of a misdiagnosis of autism. How do I go about losing the autism diagnosis?” she asks. Here are some parts of that letter.

“Hi, Dr. Treffert. I recently read your paper about hyperlexia. I’m 15 and after all these years of being patronized and convinced to believe I’m something I know in my soul I’m not, I can honestly say that type 3 hyperlexia describes me to a T! I know myself more than other people know me, and I know I was never autistic in the first place, even though everyone else tried to convince me otherwise. Ever since my diagnosis (I was diagnosed with Asperger’s when I was 10), the school system has patronized me and treated me like someone who is “slow.” Like when I was first getting into high school, the school tried to put me into classes with the “slow” kids. My mom, even my homeroom teacher at the time convinced them that I have more potential than that, and I don’t blame them.”

“I came across your paper and as I read about type 3 in particular, I don’t know how to put it in words, but it was like I found the last piece of the puzzle, like the dots were connected and the mystery was solved. I said to myself, “it all makes sense now!“ I showed my family and friends this and I asked them “does that sound familiar?!” Their jaws dropped because of how accurate it described me. I’ve tried to educate others about hyperlexia itself, and they looked at me like I was making stuff up…hyperlexia isn’t a picnic in the park when you have it. I could write a dam novel about my experiences. But let me tell you about hyperlexia from the affected person’s point of view:”

“* These children also read early, often show striking memorization abilities and sometimes have other precocious abilities as well.”

“I could read, write and do math and play music at an age where other kids were only starting to learn the alphabet. I don’t know why or how, but then it just really clicked in my mind at the time. I always had my nose in a book, even when I didn’t know what the phrases meant. I just loved reading. As for the memory thing, again, I don’t know why I can just remember stuff from even years ago.

* “They may have ‘autistic like’ behaviors, but, in my experience, they do not have autistic disorder.”

“I don’t remember much from when I was a baby, but my parents said I did everything that would look like autism, from late talking (I couldn’t talk until I was three), to the toe-walking to even echolalia. I didn’t have much sensory issues, I didn’t mind being hugged or anything unless it was some person I didn’t know or trust. This seems out of character for an autistic person, but I actually love parties and things like that. I used to hate sudden, big changes though, unless it was something I knew it was coming. I mean, I just didn’t take the time to think before I acted. I also didn’t read people’s facial expressions and tone of voice, but it’s just that I didn’t pay attention to that stuff. But, as I spent more time in the outside world, I eventually learned the ways of the world. I think of what I did in the past, and think, ‘if only I knew what I know now.’

“Thank you so much for helping me find the truth about myself. Hyperlexia, especially type 3, definitely needs more awareness so children in the future don’t end up like me. Thank you and keep going with your studies.”

* Quotes from Dr. Treffert’s article, written in the Wisconsin Medical Journal, “Hyperlexia III: Separating ‘Autistic-like Behaviors from Autistic Disorder.”
Abstract

With the current emphasis on early intervention in autistic spectrum disorder, there is a risk of clinicians failing to properly identify and separate out “autistic-like” symptoms and behaviors from autistic disorder itself in certain conditions. In failing to make that critical distinction, a diagnosis of “autism” can be erroneously and prematurely applied to children who read early or speak late, leading to very different outcomes and unnecessary worry and distress for parents or other caregivers. Hyperlexia III and Einstein Syndrome, described here, both may have “autistic-like” traits and behaviors that can masquerade as autistic disorder; the same is true of some children who are blind. I have 150+ cases now where there was a diagnosis of ASD prematurely applied to these individuals, and where the outcome was instead very positive with “recovery” from an autistic disorder they never had. This paper describes those conditions and makes suggestions for proper identification which can lead to appropriate management.

1. Children who read early - hyperlexia and its sub-types

In my work with savant syndrome, I get many parents inquiring about the presence and implications of savant-like behaviors in children, adolescents or adults. Occasionally these behaviors present as a rather startling precociousness, including fascination with letters or numbers. In spite of these behaviors present as a rather startling precociousness, the children do begin to socialize more. (2) In short, “autistic” behaviors had diminished and while remaining aloof, the children did begin to socialize more. (2) In short, they emerged significantly from their “autism” because it was not autistic disorder at all.

A 1999 article entitled “Reading Skills in Hyperlexia: A Developmental Perspective” by Nation provides a comprehensive review of the literature to that date. (3) One section of the article examines the relationship of hyperlexia to developmental disorders such as autism. The author concludes that hyperlexia, while present in some children with autistic disorder, is not specific to autistic disorder and can be seen in non-autistic persons, many of whom do have transient, autistic-like symptoms and behaviors.

It has been my experience, based on cases that continue to come to my attention, that hyperlexia needs to be subdivided into three distinct categories: type I, type II and type III. In so doing the often expressed view that hyperlexia is, in all cases, a form of autism can be properly dispelled and prognoses appropriately applied much to the relief of many concerned and distressed parents.

a) Hyperlexia, type I

These are very bright, normal (neurotypical) children who simply read early to the amazement of their parents, grandparents, teachers, peers and parents of their peers. Often one or both parents have read often and patiently to their children. Very early the child begins to “read” the book - this is actually rather prolific memorization of the book triggered by the words and pictures on the page. Soon however the child is actually reading the words in the book, rather than just memorizing them, and that reading ability can then be transferred to other books. The child is reading at a first or second grade level in pre-school, kindergarten or even earlier. At some point most of the other children in the class catch up as they begin to read. This group of hyperlexic children are what I call early, or precocious readers. They are bright, neurotypical children who happen to read early and show no signs of autistic-like behaviors.

Case Example One

JT’s mother read regularly to all her children at nap time and bedtime. At age three, JT wanted to read the book “Little Black, The Pony” herself as she would watch her mother’s lips intently as mother read to the book to her. Then one day it happened, JT read the book to her mother instead of the other way around. The father was skeptical, and indicated JT had probably just “memorized” the book. Not so. Mother gave JT a newspaper article she had never seen before and JT read it perfectly.

At nursery school, JT read to her classmates to the astonishment of the teachers. With formal testing JT was reading at a sixth grade level at age three with full comprehension ability and otherwise neurotypical functioning. As time went on her classmates caught up with JT’s reading ability eventually. But her advanced reading skills continued to serve her well. She went on to become a successful attorney, and, of course, a mother who now reads regularly to children of her own.

HYPERLEXIA III: SEPARATING ‘AUTISTIC-LIKE’ BEHAVIORS FROM AUTISTIC DISORDER; ASSESSING CHILDREN WHO READ EARLY OR SPEAK LATE
HYPERLEXIA III: SEPARATING ‘AUTISTIC-LIKE’ BEHAVIORS FROM AUTISTIC DISORDER, CONT.

Occasionally, I will get inquiries regarding what happens to neurotypical hyperlexic children when they grow up. They have messages from persons in their 50s or older who wrote to tell me they were in my hyperlexia I category as children and then grew up perfectly normally with no lingering residuals of any autistic-like traits or behaviors. The following is how one individual summarized his lifelong experience after having been hyperlexic as a child.

**Case Example Two**

LM, now 34, began to read shortly before age three. He was obsessed with words and letters and was never without a book. He pointed out signs and other lettering everywhere and pointed out spelling errors and typos wherever they occurred. While perhaps not understanding entirely what he was reading, the enjoyment he got from reading was the “music of the language.” He would sometimes begin reading in the middle of a book; it didn’t really matter. Reading was soothing no matter the story.

LM was good at math and had musical talent as well, including perfect pitch. Psychological testing was carried out to see if LM was a child prodigy; “I was not, but at the end of it was proclaimed ‘normal.’ Social awkwardness was a problem as a child and LM had few friends.

LM’s family immigrated to the United States when he was 13. He was enrolled in a private school through a scholarship and without any formal instruction in English became fluent in English within that first year. Following high school LM completed a master’s degree in engineering, obtained a law degree and is now a patent attorney at a large law firm. His social skills have largely normalized. LM finds his advanced reading skills continue and are incredibly useful in his profession. His memory for verbartin sketches of text is very useful in legal research. His colleagues admire his ability to spot typos at a glance and the very rapid reading ability continues to be an asset in his work.

LM appropriately hesitates to label his early reading ability - his type of hyperlexia - a disorder at all. He feels, instead, his early reading ability was an asset, not a liability, and certainly not a “disorder.” I was fortunate to have grown up when that diagnosis did not exist. The only label that my parents even thought of was “gifted.”

Others, including myself, share that hesitation to label what I call hyperlexia I as “hyperlexia” at all lest it be considered a disorder in otherwise neurotypical children. In recent years the term hyperlexia - early reading ability - has been too often mistakenly identified as being a “splinter skill” in children with autism, which, in most instances it is not.

In short, hyperlexia I is not a disorder; it requires no treatment. Rather it is a very interesting phenomenon in otherwise usually very bright, neurotypical children who startle their parents and others with precocious reading ability. While peers eventually catch up in reading skills, hyperlexia I bodes well for future academic success in those children with this special ability.

b) Hyperlexia, type II

This is a group of children who do have hyperlexia as a splinter skill as part of an autistic spectrum disorder. They read voraciously usually with astonishing memory for what they read, often have other memorization abilities, sometimes linked with number or calendar calculating skills. These splinter skills are seen along with the characteristic language, social and behavioral symptoms seen in autistic spectrum disorders. They usually carry a diagnosis of autistic disorder, Asperger’s disorder or pervasive developmental disorder (PDD-NOS). These cases include the several subtypes of autistic disorder such as classic early infantile autism, early onset autism or late onset, regressive, autism.

In this group it is the hyperlexia as a splinter skill that raises the question of savant syndrome. Clinical presentation, course of illness and prognosis are these seen in autistic spectrum disorders.

c) Hyperlexia, type III

This is a less frequently recognized form of hyperlexia. It is not an autistic spectrum disorder even though there are some autistic-like traits and behaviors which gradually fade as the child gets older.

These children read early, often show striking memorization abilities, and sometimes have precocious abilities in other areas as well. They may show unusual sensory sensitivity, echolalia, pronoun reversals, intense need for sameness and resistance to change, specific fears or phobias, have lining/stacking rituals and/or strong visual and auditory memory. Unlike children with ASD, however, they are often very outgoing and affectionate with family, even though reserved and distant with peers and would be playmates. They do make eye contact and can be very interactive with persons close to them. These children seem quite bright, inquisitive and precocious in some areas overall. Reading and memorization are conspicuous and often quite amazing. There may other autistic-like behaviors as well. But over time they fade and these children are then quite typical for their age. The prognosis for these children is excellent as they outgrow their autism they never did have.

**Case Example One**

A mother wrote: “Reading the summary on your web site is like reading the description of my daughter in every way. She was a late talker, socially-avoidant with those she didn’t know well, and began reading at age 2½ or so (it’s hard for me to tell when she started as I assumed she was memorizing books until this point). In your words she was ‘autistic-like’ but the diagnosis never seemed right on a number of measures. She was diagnosed with autism a few months before she turned three but it never quite fit. After 15 months of interventions, she is now a normal (whatever that means) 4½ year old and the consensus is that she was misdiagnosed. That said, she continues to display a number of precocious skills (reading, math, spatial skills, expressive language, etc) and, while not delayed in any measurable sense, she is also an unusual child with respect to social relationships (precocious these days), sensory issues and activity level.”

This mother indicated that while she was “relieved that autism is no longer an issue,” she was having difficulty making educational choices for her daughter, including whether to send her to kindergarten early based on her advanced academic functioning (generally at a second grade level) or to hold her back one year because her social and emotional skills (while no longer delayed) were not entirely consonant, as yet, with her academic abilities.

**Case Example Two**

Another mother sent me a video of her son, NS, reciting the alphabet at age 23 months. He “sees letters and numbers everywhere and spells out the names of the stores.”

NS was given a “clear” diagnosis of autism by a psychologist after referral by a neurologist when the child was 12 months old because he never pointed, clapped or waved. However before he turned two, NS had about 100 words, and by his second birthday he was putting two words together and “was doing great and was gaining more and more skills every month. He was happy and loved to learn.” In spite of the diagnosis of autism NS was communicating well at age two, and while content playing alone he did copy and imitate other children and especially enjoyed older children ages four to six. He would give his family plentiful hugs and kisses and knew all of their colors.

At that point mother wrote, “Many people who meet NS and I tell them he has autism are surprised, I think because for the most part he is engaged and social. He has done well with the (applied behavioral analysis therapy). The fascination with the letters and numbers is strange however.”

About six months later I got a follow-up on NS: “I wanted to thank you for your words of encouragement. You were right. NS is doing very well. He has caught up and is at age level for his language. He continues to be VERY social and affectionate. He still loves letters and numbers. His skills have increased and at age 2½ years he counts and recognizes up to 10 and can tell you what starts with the letter “b”, “a”, “z” and so on. He is mimic reading also. He doesn’t know how to read, but for example will read “b…. u…. a” and then say “Yes, it’s blue.” He is social, however he doesn’t do much pretend play. He loves to play with his cousins, run around the house, go to the park and play with other kids. From my account right now, I have a regular two year old who had some special extras!!”

HYPERLEXIA III: SEPARATING ‘AUTISTIC-LIKE’ BEHAVIORS FROM AUTISTIC DISORDER, CONT.

Case Example Three
GM was five years old when his mother first wrote to me in 2002. “GM was hyperlexic as a child. He showed autistic-like symptoms early on but as language emerged, they have all but disappeared. He still struggles with vocabulary and usage, but thankfully he is a motivated child who is trying so hard to develop coping mechanisms to manage this unique learning style. As you know, there is much debate about hyperlexia and into which diagnostic category it falls. You have outlined them very well I think. It was a long and difficult road for me as a mother trying to get a handle on things. I wish I had seen the article sooner.”

I received an eight year follow-up from GM’s mother in 2010. GM was now 13½. “and doing exceptionally well.” GM is an A/B student. He is “on the quiet side until he is comfortable.” He has no sensory issues and does fine with friends and when in groups. “Earning a black belt in tae kwon do helped with confidence on many fronts. Skills-wise GM is a musical whiz. He has what you referred to once as super-abilities. He took classical piano for five years and played beautiful music, but the rock star in him loves drums. Once he discovered percussion, you’d think her had been playing them forever. His talent is innate.”

“GM knows he is hyperlexic. Sometimes when there is a big group talking all at once he has difficulty following the chatter. He experiences the same when there is a lot of unfamiliar information to digest in certain subjects like history and science. That said, he copes very well and is exceptionally comfortable asking for help or clarity. He is the sweetest, most thoughtful kid. He has a very kind heart that melts mine. I couldn’t be more pleased with his management of hyperlexia. He undoubtedly falls into the third group you described. Though the early years were very challenging and often lonely, I treasure his leaps and tenacity. He is my hero.”

Case Example Four
When AB was 2½ years old he was diagnosed by a speech therapist as having PDD-NOS in that he was reading sight words but had very little pragmatic language and delayed social skills. His parents took him to two development pediatricians both of whom felt that while AB did have many autistic-like-flags - poor eye contact, expressive/receptive language delays, lining/stacking behaviors, under sensitivity to pain and early reading, he did not fit the PDD-NOS clinical picture.

His mother recently wrote “that through whatever research I could find, your type III hyperlexia seemed like the best fit description of AB - and gave me some optimism. Now a year later, with the help of speech therapy and a small preschool for kids with special needs, AB is speaking in full sentences, initiating conversations, developing pretend play and is very engaged. His language is still out of sync with his reading ability - he’s not quite there with questions words and I expect that he is still not quite at age level for expressive/receptive language, while he is easily reading at a first/second grade level. I am sure we will continue to face challenges, but it is truly remarkable how much he has changed now that his language has improved.”

In subsequent correspondence, AB’s mother listed some of the other autistic-like behaviors AB did show for a period of time: rituals and insistence on sameness, knew letters and numbers to 100 before he said ‘mama,’ more interested in pictures or the story, obsessed with letters and numbers, and atypical language development with a large collections of nouns by age two but not spontaneously combining words. At age nine months he carried his magnetic alphabet letters from one room to another, always in the same (non-alphabetical) order and at age two did 24-piece jigsaw puzzles in the same order each time. AB’s parents just had their first conference after AB had attended his new preschool. Mother reports that “socially AB is hyperlexic III children were experiencing as expressed in correspondence with me.

2. Children who talk late
In his book Late Talking Children Thomas Sowell pointed out how often autistic-like symptoms appeared in children with delayed speech in a group of 46 such children based on parental reports. (4) In a follow-up book four years later - The Einstein Syndrome: Bright Children Who Talk Late - Sowell wrote that, “Many parents wrote to me to say they were astonished to read about things that seemed like an eye-witness description of their own child and their own family. One mother told me that her son has bopped reading descriptions that fit her child and her family so closely, while other mothers have reported simply weeping as they read for the first time something that so obviously fitted their own puzzling child.”(5) Sowell’s experience with late talking children thus mirrored by own findings with children who read early.

Sowell was careful to point out that in some cases the diagnosis of ASD was the proper one and delayed speech can, in certain cases, be a part of an ASD or other physical condition. But he also found that sometimes cases of delayed speech were being inappropriately diagnosed an autism by persons not particularly qualified to do so. Beyond that “There are the experts specializing in autism. They are in one sense particularly well qualified for saying whether a given child does or does not fit this category. On the other hand, to some of the experts, autism is just a label to be used for sake of expediency in getting government funding of help that the child needs on other grounds. Others are engaged in a campaign to downgrade the shock of the term by applying it widely.”

The two books together summarize experience with the 46 original families plus a new group of 239 late-talking children. Some of these fit what Sowell describes as the Einstein Syndrome – exceptionally bright but exceptionally late in beginning to speak - but he recommends careful professional evaluation for any child with delayed speech. He also found, based on correspondence with parents, that some children who speak late have transient autistic-like symptoms that faded over time in children in whom a diagnosis of autism had been prematurely and mistakenly applied. With that error came the same worry, concern and pessimism in those families that some of the parents of hyperlexic III children were experiencing as expressed in correspondence with me.

3. Visual Impairment
Hyperlexia is not the only circumstance where a distinction between autism and autistic-like is a critical one; that same differential diagnosis is important in children who are visually impaired. Teachers and parents of visually impaired children often refer to what are called “blindisms” in such children. In a 1998 article Ek, Ferrell, Jacobson and Gilberg point out that “blindisms” - stereotypical movements, language problems and certain other behaviors - are common in children with congenital or other types of blindness. Hobson described the similarities in development during preschool age (three to four years) between blind children and those with autism (7). In both groups impairments in symbolic play, confusion in the use of language and stereotypes were frequent. Many of the autistic features observed in the young, blind child without cerebral damage disappeared with age. As the child acquired a better understanding of the surrounding world, and with the development of language, a basis for sharing experiences and feelings with other people developed. According to Hobson “blindness seems to delay rather than prevent development in these respects.”

In 2010, Hobson and Lee did an eight-year, follow-up study on nine congenitally blind and seven sighted children who met formal diagnostic criteria for autism. Follow-up of the nine congenitally blind children with autism revealed that, in adolescence, only one still satisfied the criteria for the syndrome. In contrast, all of the seven sighted autistic children still did meet the criteria for autism.

Autism, autistic symptoms and blindisms are often confused with each other and may be difficult to separate in blind children. This distinction in visually impaired children, just as in children with hyperlexia, is critical if parents are to be spared unnecessary distress from a diagnosis improperly
applied and, equally important, if the right course of treatment is to be applied to the right patient.

4. Other conditions
The term “autistic-like” has its counterpart in other medical conditions. For example some patients on certain medications may have “Parkinson-like” side effects but do not have Parkinson’s disease. In much the same way some other central nervous system conditions, some transient, can produce “Alzheimer’s-like” signs and symptoms but not be actual Alzheimer’s disorder. Exceedingly careful history, observation and examination is critical. It may be necessary to let the natural history of the disorder emerge before applying a definitive diagnosis or label that can have important, lasting consequences. Treatment can still be applied to target symptoms, but parents or others may be spared the unnecessary worry and fear that can accompany certain diagnoses.

Summary: The first step in treatment is to make the proper diagnosis: management follows.

When precocious reading ability and extraordinary fascination with words present in a very young child, especially when accompanied by other language or social problems that might suggest an autistic spectrum disorder, a comprehensive assessment by a knowledgeable professional or team familiar with the differential diagnosis of the various forms of hyperlexia is indicated. That same comprehensiveness and caution needs to be applied to children with delayed speech or visual impairment. As with any disorder, the first step in treatment is to make the proper diagnosis by a skilled clinician. In some cases hyperlexia, for example, can be a splinter skill in a true diagnosis of autistic disorder. However caution needs to be used before applying that diagnosis to children with hyperlexia as a presenting symptom. The need for that caution stems from the pervasive, mistaken notion that hyperlexia in a very young child is always linked to autism. When a diagnosis or label of autism is prematurely and erroneously applied to a child that may be more appropriately identified as having hyperlexia III, it produces much unwarranted stress, burden and worry for parents and leads to mistaken predictions regarding prognosis.

The abundance of caution and watchful observation I recommend in children who read early, speak late or have visual impairment does not preclude intervention and treatment while the “natural history” of the disorder separates out hyperlexia III, Einstein Syndrome or blindisms from autistic disorder. Speech and language therapy, occupational therapy and ABA to address the areas of speech and comprehension, sensory issues, social isolation and ritualistic behaviors, for example, can all help with the autistic-like symptoms just as they do in those children with actual autistic disorder.

The abundance of caution works in the other direction as well. Just as there is risk in making “false positive” diagnoses of ASD in children who read early, speak late or are visually impaired, there is also the risk of giving “false hope” in those instances where certain symptoms are a part of autistic spectrum disorder. My answer to both those risks: Careful, comprehensive evaluation by skilled clinicians knowledgeable about ASD as well as hyperlexia III, Einstein Syndrome and blindisms. From such an informed consultation equally informed intervention strategies will emerge whatever the proper diagnosis.

From my correspondence with parents, I found that even those parents whose children did have ASD as the underlying disorder in which hyperlexia, delayed speech or blindisms were the present symptoms were also helped, and relieved, when directed to knowledgeable treatment resources in their community. Hopefully, as the literature continues to evolve on hyperlexia, there will be more clarification regarding the classification of hyperlexia into its sub-groups and, correspondingly, more information will be disseminated where it will become increasingly clear that delayed speech or blindisms can be autistic-like symptoms, rather than autism itself. Then even more resources will emerge for comprehensive evaluation and tailored treatment principles to those children into whichever group or subgroup they belong.

References:
2. Kupperman, P. (personal correspondence, 2009)

This topic and a PDF version of the paper from the Wisconsin Medical Journal, Volume 110 (6), 281-286 2011 can be accessed at www.savantsyndrome.com by accessing the “hyperlexia” article on the right menu.
This manual is a work in continual progress. It represents correspondence with nearly 300 families who have shared their story and experience, and have asked their many questions about their children who are early readers. We have tried to answer some of those questions in this booklet. We also hope it will be shared more widely with teachers, therapists and other professionals who come in contact with these remarkable children in assessments or interventions.

When the number of cases reached 167 we did some analysis trying to sort out the parameters which separate hyperlexia 1, 2 and 3 from each other. Our hope was to eventually be able to sort out “autistic-like” features and behaviors from autistic spectrum disorder itself. To do that more with more success we have determined we need more expanded, extensive and uniform data on all the cases including prenatal, birth, and postnatal information along with other developmental milestone history and intervention efforts. To that end we have designed an Internet survey instrument which we will be sending to families for their completion if they are willing to participate. Eventually those results will be summarized and published.

Meanwhile we invite new families, and teachers and other professionals, to make use of this manual as it progresses. And we invite more “I’ve got a son or daughter who...” inquiries through the daroldt@charter.net address when families have questions about children who read early.

And we especially invite families to share their “success stories” since ultimately outcome will sort out the three forms of hyperlexia. And these success stories then provide so much hope, relief and direction for families involved in the hyperlexia journey.

Finally there are several other resources already available. There is a hyperlexia parent network page on Facebook, and there is a hyperlexia 3 web site at hyperlexia3.com.

More to follow. Stay tuned.