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ABSTRACT

This paper addresses the dilemma faced by the requirement that educators provide appropriate and effective education for higher functioning students with autism, while lacking the necessary knowledge to provide such interventions. The first section discusses the diagnosis of autism (especially noting the presence of a "triad" of deficits including impaired social relatedness, impaired language, and restricted range of activities/interests that allow an "autistic spectrum" diagnosis.) The discussion notes the common presence of mental retardation in the diagnosis of autism and the inclusion of autism within the broader term, "pervasive developmental disorders." However, the emphasis of this paper is on higher functioning students with either Asperger's Syndrome or Pervasive Developmental Delay conditions that are more difficult conditions to describe adequately since there is not yet any established definition or diagnostic criteria for high-functioning autism. The next section looks at special education in the United States under the Individuals with Disabilities Education Act (IDEA). It suggests that the classification of autistic spectrum disorder as defined by IDEA is useful, since the "triad" of weaknesses diagnostic of the autistic condition provides important functional information. A section on educational interventions and considerations stresses the importance of providing children diagnosed as autistic spectrum students with structure, visual aids, intervention in language pragmatics and social skills, recognition of fixations and special talents, and medication. Two cases illustrate these principles. Recommendations for educating higher functioning autistic spectrum students focus on providing school personnel with the information they need to educate these students both at the preservice and inservice levels. Appended are the test data summary sheets. (Contains 36 references.) (DB)

Pitfalls in Educational Programming for Autistic Children in the United States of America

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"I cannot overemphasize the important role that good teachers...play in enabling autistics to lead a fuller life."

(Grandin, 1988)

Introduction: The Dilemma

In our clinical work in the United States of America, which involves neuropsychological/educational assessment and consultation, we come across many dedicated and skilled public school teachers who work with "higher functioning" autistic children. In fact, most often, these teachers are the agents who refer families to seek independent consultative services. In many instances, teachers observe the inconsistent academic performance, behavioral "oddities" and poor pragmatic communication skills of these students and are under the impression that more could be done to help them realize their potential. Understandably frustrated in their own efforts and lacking the ability to "reach" these students, they admirably suggest that parents seek independent evaluation and consultation in the hope of obtaining guidance and more specific educational recommendations.

Ironically, teachers' concerns frequently serve to illuminate a systemic dilemma which extends far beyond any individual child in question. The nature of referral questions reveals a lack of expertise among public school personnel regarding **background knowledge, understanding,** and **effective educational interventions** for higher functioning autistic students.

Included as a specific category of handicap under the federal Individuals with Disabilities Education Act (I.D.E.A.), the public school system is obligated by law to provide appropriate and effective education for these children; yet, in reality, this rarely occurs. Individual families, already emotionally and financially encumbered with meeting the needs of an exceptional child, must bear the further expense of independent consultation. Such consultation would be unnecessary if public school staff were more appropriately trained. In essence, many families with autistic students are being over-charged for their education, i.e., tax dollars plus the cost of independent consultation. If the system were functioning as it is supposedly meant to, tax dollars would be used by the public schools to hire appropriate consultants to provide staff training when necessary.

While financial cost is somewhat easy to assess because it tends to be concrete, it is infinitely harder to assess the emotional cost to families as they struggle to provide the best possible education for their affected children. Moreno (1992, p. 101), the parent of a higher functioning autistic child, speaks for many when she reminds us that "parenting any person with autism, regardless of the functioning level, is a very challenging experience." Further, it is probably even more difficult to assess the emotional cost to a child who is misunderstood by benevolent and well-meaning souls--as well as the greater cost to society as a whole when we, as educators, fail to empower a child to achieve his or her potential.

In this paper, we shall address this dilemma and make recommendations that might help in the effort to rectify it. Information will be presented in the following sections: (1) autism, the diagnosis; (2) general information about "special education" in the United States; (3) educational considerations and intervention with autistic students; (4) case examples; and, (5) recommendations and concluding remarks.

Autism, The Diagnosis

Autism, identified by Kanner in 1943, is a neurological condition of low prevalence

ranging from early estimates of 4 to 5 per 10,000 population to more recent estimates of 10 to 11 per 10,000 (Lotter, 1966; Rutter, 1978; Dawson & Castelloe, 1992; Bryson, Clark & Smith, 1988; Burd & Kerbeshian, 1988). Higher rates reflect, in part, a revised definition that involves a continuum of severe to milder forms (i.e., Pervasive Developmental Delay, Asperger's Syndrome). Because of this continuum, autism is sometimes referred to as a "spectrum" disorder.

Rates of mental retardation in autism range from 76% to 89% (Dawson & Castelloe, 1992; Bryson et al., 1988; Steffenburg & Gillberg, 1986). The social class distribution of autistic children's families is similar to that of the general population (Burd & Kerbeshian, 1988; Cialdella & Mamelle, 1989). The ratio of males to females with autism is approximately 3 or 4 to 1 (Gittelman & Birch, 1967; Kanner, 1957).

Common across the spectrum of autism is a **triad** of deficits including (Bauer, 1995): (1) impairment of reciprocal social interaction; (2) impairment in the development of language/communication; and, (3) restricted range of activities/interests. In the Diagnostic Statistical Manual-Fourth Edition of the American Psychiatric Association (i.e., DSM-IV; 1994), autism is viewed as a "developmental disorder" and is grouped under the broad class of pervasive developmental disorders (Tsai, 1992). According to the DSM-IV (APA, 1994, p. 65), "the pervasive developmental disorders are characterized

> by severe and pervasive impairment in several areas of development: reciprocal social interaction skills, communication skills, or the presence of stereotyped behavior, interests and activities. The qualitative impairments that define these conditions are distinctively deviant relative to the individual's developmental level or mental age.

In the DSM-IV, five conditions are placed within this category. They include: Autistic Disorder; Rett's Disorder; Childhood Disintegrative Disorder; Asperger's Syndrome; and, Pervasive Developmental Disorder, Not Otherwise Specified. With the category of autism, which is characterized by a severe impairment in the aforementioned areas, approximately 75% of affected individuals are mentally retarded. With Rett's Disorder, individuals are most frequently severely or profoundly mentally retarded.

The conditions in which mild intellectual impairment is most likely to occur include:

Childhood Disintegrative Disorder, i.e., which is characterized by normal development during the first 2 years of life followed by a deterioration in the "triad" of deficits associated with the autistic spectrum; **Asperger's Syndrome** (Asperger, 1944) which is applied to individuals who exhibit the triad but whose intellectual functioning is average or above (i.e., intelligence scores 90 +); and, **Pervasive Developmental Delay** in which there may be milder symptoms.

In this piece, our discussion will focus mainly on "higher functioning" autistic children. According to Tsai (1992), there is not yet any established definition or diagnostic criteria for high-functioning autism. Although there is no professional consensus on the severity boundary of autism, the cognitive level that has been used by investigators in this field of research has been a Performance IQ level of above 70 on a valid and individually administered IQ test (Bartak & Rutter, 1976; Freeman, Lucas, Forness & Ritvo, 1985). This is the criterion we will apply in this paper. Therefore, classification categories will mainly include children with diagnoses of Asperger's Syndrome and Pervasive Developmental Delay.

In the case of Asperger's Syndrome, two factors are of note. First, Asperger (1979) disagrees that the syndrome which bears his name is a variant of autism. He states that the two conditions are differentiated by age of onset, speech delay, clinical features and prognosis. Rutter (1989 cited in Tsai, 1992) has echoed this view. We have included this group of individuals in our discussion because many of their educational needs are similar to those of other autistic spectrum children.

Second, although individuals with Asperger's Syndrome have IQs that fall within the average range, they tend to exhibit weaknesses in specific areas of information processing. The degree of impairment is generally milder, however, than in those individuals described as having a Pervasive Developmental Delay.

It is important to note that within **each** of the categories that pertain to autistic conditions, individuals will vary in idiosyncratic ways. Therefore, a label, in and of itself, is not likely to provide all necessary information about a given child. Regarding impairment in the communication/language area, autistic spectrum children have frequently been compared and contrasted with those having developmental receptive/expressive language

disorders (Hobson, 1992). In comparison, autistic children generally have more deviant language, including more frequent occurrence of pronoun reversals, echolalia, stereotyped utterances, metaphorical language, and inappropriate remarks. They make less use of language for social purposes, tend not to understand or use gestures, and show less symbolic play (Bartak, Rutter & Cox, 1975; Cantwell, Howlin & Rutter, 1977).

Further, Goodman (1992, p. 43) makes the point that the defining characteristics of autism are a set of **deviant** traits in contrast to traits of other "developmentally delayed" groups of children. As such, autistic individuals are likely to respond best to the most rigorous intervention (Goodman & Redefer, 1989).

In addition to the triad of issues present in autistic children, Temple Grandin (1990; 1988), a high functioning autistic individual, has written informatively from her own experience about other characteristics that are often predictable as well. These additional characteristics may include: sensory problems, arousal difficulties, fixations, and strengths in areas of visual spatial reasoning. Regarding sensory problems, these mainly involve the auditory and tactile senses.

Auditorially, noises can be very distressing to these children. For reasons that are not clearly understood, their nervous systems cannot modulate auditory input. Therefore, high frequency noises such as a vent fan or hair dryer may be very disturbing. A chorus of loud voices at a birthday party, for example, may be frightening and overstimulating as well.

In the tactile modality, many of these children may also be hypersensitive. Thus, cold temperatures, changes in temperature and/or uncomfortable clothing become "amplified" by their differently functioning nervous systems (Grandin, 1988, p. 4).

Regarding the issue of arousal, some autistic students have an overaroused nervous system. This may lead to hyperactivity. Conversely, some children exhibit underarousal when they must engage in activities that require sustained concentration; they can be observed to yawn frequently and shift restlessly in their seats during such endeavors.

Fixations, i.e., exaggerated preoccupations or obsessions, are also frequently observed in autistic children. These are idiosyncratic and may involve a range of objects, activities, etc.

Finally, visual strengths are frequently characteristic of higher functioning autistic

children as are weaknesses in working memory and speed of processing. Grandin (1988, p. 6) clearly describes her own experience in these realms:

> All of my thinking is visual, and I have problems handling long strings of sequential verbal information. Written directions are easier for me to follow than oral...in the area of visualization I have superior talents, but...I am unable to hold one piece of information in my mind while I manipulate another...this makes balancing chemical equations and algebra almost impossible...On the spatial relations tests (where you have to rotate a figure in your head), I was at the top of the engineering norms on an untimed test. On a timed test...I got an average score. I am not a quick thinker; it takes time for the image to form in my imagination. Yet, development of my visualization talent enabled me to become one of the best livestock equipment designers in the world.

Special Education in the U.S.A.

For educators, the low prevalence rate of autistic spectrum disorders, in general, and the relatively small number of higher functioning autistic students, more specifically, poses a particular challenge. Despite the fact that autism is a handicapping condition under the I.D.E.A., most school administrators and teachers have had little training or direct experience in dealing with autistic children. From this core set of circumstances, a variety of problems ensues. In order to illustrate them clearly, however, it is first necessary to provide more general information concerning the broader context of special education practices in the United States of America.

In the U.S.A., special education is governed by **federal** legislation which mandates that the **states** provide appropriate public education to all students with disabilities. The two laws that are most relevant for school aged children are Public Law 94-142, the Education of All Handicapped Children Act, and, as previously mentioned, Public Law 101-476, the Individuals with Disabilities Education Act (Zigmond, 1995; Muskat, 1996).

Key elements of PL94-142 and PL101-476 mandate that: each child with special needs has an **individualized educational program (I.E.P.)**; that services be delivered in the

least restrictive environment; that due process procedures be established; and that identification, diagnostic, and assessment procedures be free of racial and cultural bias. With I.E.P.'s, law dictates that each plan contain: present levels of academic performance; annual goals; short term objectives; educational services to be provided; the participation of the child in the regular education program to the extent that he or she is able; the date of the initiation and the anticipated length of services; and, procedures for evaluating progress toward stated objectives (Zigmond, 1995).

Children having educational difficulties are most often initially identified by parents, teachers and physicians (Muskat, 1996). Most children having Pervasive Developmental Delay are diagnosed prior to the formal school years due to multiple lags they exhibit in areas of language, motor functioning and social behavior. Children having Asperger's Syndrome, however, may be more likely to be identified once formal schooling has begun. While their academic skills may be on grade level, their social behavior is likely to be out of sync with that of their peers.

Once concerns are brought to the attention of school administrators, a meeting is arranged which is usually attended by a school administrator from the local Board of Education, the child's teacher, the school principal, the parents, the school psychologist, a parent representative and other specialized personnel as deemed appropriate (i.e., school social worker, speech/language therapist, psychiatrist, etc.). Parents may also bring a private consultant to the meeting as well as have their child evaluated by a private practitioner (i.e., private evaluations must be conducted in a format similar to that of public school evaluations in order for findings to be reviewed, approved and accepted by the public school).

Observations and concerns are presented by parents and members of the team. Based on these, an assessment plan is formulated for the purpose of determining whether the child meets classification criteria and is eligible for services. Most assessments include a psycho-educational evaluation which is comprised of a standardized intelligence test, some measure of visual motor integration, projective tests to screen emotional factors and examination of basic skills acquisition in isolated areas of decoding, spelling, and math. Other evaluation services available include occupational therapy, physical therapy, psychiatry and social work.

Consulting psychiatrists and neurologists may also be called in by the school system if deemed necessary.

Once the prescribed evaluations have been carried out, the team reconvenes to discuss findings and to develop an individualized educational plan if the child has been found to be eligible for services. In order to be eligible for services, a student must fit criteria for a given classification category as set forth by law, i.e., must be "diagnosed". Names of classifications and categories may differ from state to state. In New York, for example, there are 12 approved handicapping conditions which entitle a student to services (New York State Education Department, 1995). They are: autistic; emotionally disturbed; learning disabled; mentally retarded; deaf; hard of hearing; speech impaired; visually impaired; orthopedically impaired; other health impaired; and, multiply handicapped. In accordance with law, the I.E.P. must be reviewed and re-formulated yearly by the school team pending parental approval. Children must be re-evaluated to some extent yearly in order to provide updated documentation for eligibility of services. "Intelligence" tests must be re-administered triennially. If the child is found to be ineligible for services and parents wish to contest the decision, they have a right to a hearing under due process in order to appeal the determination.

In the actual delivery of services, the notion of "least restrictive environment" bears discussion. This refers to the fact that special education services are offered along a continuum ranging from those least segregated from the mainstream to those most segregated. An example of a 'least restrictive' environment would be a pull-out program such as resource room. A child receiving this service would spend most of his or her time in the mainstream class and be pulled out occasionally (i.e., one - five times per week) for remedial services. A more highly restricted environment would be a 'self-contained' class for learning disabled students. A child placed in this program would be segregated from the mainstream for most academic subjects; he or she may join mainstream students for "special" subjects or electives such as art, physical education, music, etc. (Muskat, 1996).

Faced with growing numbers of children who have been classified and dwindling funds to provide services for such students, the most recent trend in special education has been to extend the notion of 'least restrictive environment' to a practice called 'inclusion.'

This refers to informal public policy enacted at the federal and state levels which 'encourages' the education of learning disabled students within mainstream classrooms (Martin, 1993; Gallagher, 1993).

Relevant Issues in Diagnosis. The notion of "diagnosis" which underlies classification derives from a "medical model". Commonly cited definitions of "diagnosis" include: the "act or process of deciding the nature of a diseased condition by examination of the symptoms"; "a careful examination and analysis of the facts in an attempt to understand or explain something" (Neufeldt, 1994, p. 379).

The primary purpose of a diagnosis is to label a condition, thereby providing language with which to speak about it and creating a common frame of reference. If a diagnosis is useful, it should provide information about the condition as well as a cue to avenues of treatment, aspects of prognosis, etc. Further, classification is necessary for the acquisition of knowledge and scientific progress in a field (Tsai, 1992; Rutter & Gould, 1985).

Many educational classifications are rather global and do not provide specific information as to the condition or appropriate intervention (Rutter & Gould, 1985). For example, the "learning disabled" classification at present is sufficiently broad so as to be almost meaningless. It informs us only that there is some discrepancy between a child's performance on individually administered tests of intelligence and achievement. It tells us nothing about the cause and suggests nothing about appropriate intervention in and of itself.

Further, in pupil personnel and child study team meetings, special education administrators will often make a distinction between a "medical" and an "educational" diagnosis. The medical diagnosis may name the underlying condition whereas the educational diagnosis describes the functional impact of the condition on the student. Thus, a child may be medically diagnosed as having, for example, Tourette's Syndrome; educationally, however, the classification may be learning disabled (i.e., many students with Tourette's exhibit accompanying weaknesses in areas of language processing and attention). While etiology alone is unlikely to be sufficient in formulating educational intervention, there are certain conditions, the very nature of which provides important data regarding the needs of the affected individual.

In our clinical experience, the classification of an autistic spectrum disorder is

functionally one of the most useful categories of handicapping conditions covered under the I.D.E.A. That is, the nature of the condition provides important information about its functional impact. If a student has been diagnosed properly, one knows immediately that: (1) he or she will exhibit the "triad" of weaknesses to some degree (i.e., impaired social relatedness; impaired language and pragmatic language skills; restricted range of activities/interests); and, (2) he or she may also experience sensory and arousal problems, fixations, and visual thinking. Additional information regarding more specific areas of strength and weakness can be obtained through assessment and observation.

Further, an "autistic spectrum" diagnosis, if properly rendered, also provides important insight into effective educational intervention (i.e., there are certain methods to employ upon which many experts in the field agree); this will be addressed in further detail below. Yet, in numerous instances we have seen, even when some children arrive at school having been previously properly **medically** diagnosed as having a Pervasive Developmental Delay, educators often err and focus exclusively upon their language deficits and classify them as speech/language impaired (rather than autistic). This is unacceptable because, as previously mentioned, children with autism differ in important ways from those with developmental expressive and receptive language disorders (Bartak, Rutter & Cox, 1975; Hobson, 1992). Thus, knowledge and application of the proper medical diagnosis provides a critically useful context and leads the way to a set of useful intervention and management strategies.

Educational Interventions and Considerations

For an educator who has had direct training and experience with autistic children, their unusual social relatedness, use of language, fixations, etc., are predictable and familiar--although nonetheless understandably challenging at times within a learning situation. For an educator who has little or no training in the area and no direct experience with such children, his or her first exposure to an autistic child can be an understandably jarring and uncomfortable one. Further, without an appropriate knowledge base, a teacher cannot possibly enact environmental modifications that may help minimize the child's unusual behaviors as well as enable the child to fit into the fabric of the classroom more smoothly.

Thus, neither the student's nor the teacher's needs are met in this set of arrangements.

Despite this, higher functioning autistic students in the United States who are able to be mainstreamed (i.e., placed within a regular education classroom for at least part of the day) are frequently placed in the classes of teachers who have no background in autism and remain there year long. Such teachers vary widely in the amount of training they may receive once a child is placed within their classroom. Often, the teacher may receive no additional training at all. At times, children placed within "self-contained" classrooms (i.e., more restrictive environments) fare little better. While there is a greater chance that a special education teacher will have some background in autism in contrast to a regular education teacher, the low prevalence of the condition by no means guarantees this.

This is unfortunate when one considers that there is a fair amount of agreement concerning more effective educational practices to enact with higher functioning autistic students. In a general sense, Goodman (1992) reminds us that developmentally delayed children require different intervention than children whose development is deviant. Unlike the former group who require additional time to 'unfold' and develop at a slower rate, the latter group--to which autistic children belong--require more deliberate, intensive and intrusive intervention.

Along these lines, for autistic spectrum children who are either placed within mainstream classrooms or self-contained classrooms, several fundamental issues must be kept in mind in formulating effective educational plans. These issues relate specifically to the characteristics of autistic spectrum individuals and include (Grandin, 1992; 1988; Bauer, 1995): (1) emphasis on and provision of **structure**; (2) the use of **visual aids**; (3) intervention in **language pragmatics and social skills**; (4) incorporating **fixations and giftedness**; (5) general educational issues; and, (6) the use of medication.

Structure. Structure is critical for autistic students who present with language comprehension and pragmatics difficulties as well as sensory problems. If used properly, structure can help a child to feel a greater sense of control over his or her environment; this is a critical ingredient in helping autistic students to realize their potential. As used here, structure incorporates **organization**, **predictability**, and '**sensory orderliness**' of the environment. For many children, this may mean starting out in a more restrictive

environment and moving gradually into the mainstream. These notions, however, if understood, can be incorporated into a mainstream environment by creating a structure within a structure.

In order to provide organization and predictability, whenever possible, autistic children should be introduced to their classroom teacher prior to the first day of school. In addition to the classroom teacher, many students profit from being provided with a full time aide who stays in close physical proximity to the child throughout his or her time within the mainstream classroom. As with the classroom teacher, the child should also be introduced to the aide prior to the first day of school. Many higher functioning autistic children require a full time aide in first and second grade. By third grade, our experience has been that some children do quite well with a part time aide.

The mere presence of an aide, however, is not sufficient. This aide must be trained to enact strategies that help to make the child's environment more predictable. For example, the aide should compile a weekly schedule, presented in a visual format, which should be reviewed with the child daily. At the beginning of the day, the daily schedule should be reviewed. Any foreseeable changes should be related to the student and indicated by the use of a previously reviewed visual symbol (e.g., a different color transparency could be placed over the segment of time during which the schedule will be different).

Throughout the day, even though the schedule has been reviewed in the morning, the aide should alert the child to changes in activities approximately 3 to 5 minutes beforehand (i.e., depending upon how much transition time is needed). Many of these children have attentional weaknesses and may not recall the sequence of events when they are actively involved in other activities. Alerting a child ahead of time enacts a positive feedback model and enables him or her to participate in the transition together with the other children rather than appearing out of sync and receiving negative feedback for doing the wrong thing.

Generally, a tight structure should be enacted at the beginning of the year. Practices can be "relaxed" as the student begins to internalize the structure and has some ability to apply it independently. School staff are forewarned to have reasonable expectations; they have not failed if the child cannot generalize the structure. This is a very slow and gradual process for most autistic students.

The autistic child's need for "sensory orderliness" must be addressed. Thus, the physical location and layout of a particular classroom should be considered when selecting classrooms for autistic students in light of such a youngster's distractibility and sensitivity to sounds. Efforts should be made not to place children in classrooms that are in "high traffic" areas of the school (i.e., the windows look out onto the school yard; next to the cafeteria; next to a generator room from which there may be a soft but audible hum). More generally, since many events occur in schools that involve loud noises, autistic students should be discretely offered the option of using earplugs if hypersensitivity to sound is an issue and earplugs offer relief.

With regard to personal belongings, the aide or teacher should actively monitor the condition of the student's desk, papers, notebooks, etc. Although many autistic children may be somewhat compulsive and tend to over-organize aspects of their environment, many have trouble keeping all materials in order and can benefit from assistance.

Structure in explicit teaching. The T.E.A.C.C.H. curriculum (Treatment and Education of Autistic and Related Communication-Handicapped CHildren), which originated at the University of North Carolina at Chapel Hill and is being adopted by some special education programs in other states as well, exemplifies the application of a structured approach (Watson, 1989; Mesibov, 1994). A comprehensive program, T.E.A.C.C.H. addresses the development of thinking skills as well as academic skills. All teaching is addressed within a highly structured, sequential format.

With preschool children who have limited ability to use words for communication, schedules are initially comprised of concrete objects (i.e., a fork may be used to denote snack time). As the child masters the notion with a concrete manipulative, one step toward abstraction is taken and a photograph is used. When this is mastered, a photograph is introduced in conjunction with the graphic representation of the word. Eventually, the word is used alone. This principle may be applied at other grade levels as well.

The T.E.A.C.C.H. program gradually incorporates deliberate schedule changes so as to help the children learn to deal more adaptively with change. It is essential that children be positively reinforced for accommodation to change. These principles may be appropriately applied at different ages, grades and ability levels.

Similar structure is also implemented in the teaching of explicit academic skills. A child's lesson for the day may be placed in a basket in a designated location. When it is time for the lesson (as indicated on the schedule), the child is directed to the location to retrieve the basket which contains materials for the lesson; the session is conducted one-to-one with a teacher for a short period (i.e., 10 to 15 minutes for early elementary students).

The task is tightly structured to the point that the child learns to place the full basket to his or her left as he or she empties it onto the table. The materials are placed in front of the child and the empty basket is then placed to the child's right.

Mainstream teachers and inexperienced special education teachers frequently report that higher functioning autistic children may be reluctant to attempt new activities, tasks, and/or skills. Tight structure, along the lines of the T.E.A.C.C.H. program, should be implemented as well as the sub-division of task components. With more capable students, once a skill is reviewed in this way, it may be incorporated fairly quickly.

Visual aids. Most autistic spectrum children profit from visual, pictorial representations of information. This applies to schedules, educational materials and therapeutic aids. It is important that visual aids contain pictures as well as the appropriate words and that these are well organized. It is also important to note that using words alone is not likely to be as effective; visual, as used here, emphasizes pictorial representations other than words. Similar to the gradual relaxation of structure, words may eventually come to take the place of other visual aids once the child has a better facility with written and spoken language.

Language pragmatics and social skills. For most autistic spectrum children, this area will be one that requires considerable intervention and will generally include specific language services to promote social and pragmatic language skills. Almost all autistic students receive some degree of individualized therapeutic intervention provided by a speech/language specialist. These services must be carefully coordinated, however, with the classroom teacher and the aide.

For example, teachers should be advised as to the manner in which skills introduced during individual language sessions can be applied to the larger context of the classroom. This will enable the child to generalize new skills and practice their use. Language therapists

may instruct the teacher on the proper use of the visual aids discussed above.

The communication behavior of many autistic students may be characterized by: a) abnormal nonverbal communication such as in the use of eye contact, facial expression, body posture or gestures to initiate or modulate social interaction; b) some absence of imaginative activity such as playacting adult roles, fantasy characters; c) abnormalities in the production of speech including pitch, stress, rate, rhythm and intonation; d) abnormalities in the form or content of speech including stereotyped and repetitive use of speech, idiosyncratic use of words or phrases, or frequent irrelevant remarks; e) impairment in the ability to initiate or sustain a conversation with others despite adequate speech; f) restricted range of interests and preoccupation with one narrow interest; and, g) difficulties with comprehension (Bartak et al., 1975; Cantwell, Howlin, & Rutter, 1977).

The communication characteristics of each individual child need to be comprehensively evaluated by a specialist in this area. When a child's particular communication profile has been identified, a formalized plan must be formulated which includes a description of the child's communication needs and how they will be addressed during individual therapy. This plan should also explicitly address guidelines for collaboration between classroom teacher and language specialist as well as how the child will be helped to generalize skills emphasized in individual sessions to his or her behavior in the classroom.

Many teachers who lack appropriate background knowledge are frequently frustrated in their attempts to incorporate autistic students into class group discussions. Collaboration between a language specialist, aide and teacher may be beneficial in this regard. For example, if the language specialist knows that a particular topic is going to be discussed, he or she may be able to "prep" the student during his or her individual session. In addition, more generally, the language specialist can meet with the classroom teacher on an on-going basis in order to suggest ways of facilitating more effective communication with the student.

Generally, teachers can make themselves more understandable to an autistic child through the simplification of the language used and reduction in the amount of language used. Many autistic students are likely to become confused when hearing a great deal of language and this may contribute to disorganized behavior. Cutting down on verbal language

and using more physical prompting and gestural cues may have a calming effect on the student by conveying the teacher's expectations more clearly with less "noise" (Watson, 1989).

Fixations and talents. Temple Grandin (1988) describes her fixation with cattle chutes which seemed to have a soothing effect on her. Many of her high school teachers and psychologists attempted to curtail and/or eliminate this fixation. In contrast, her science teacher, Mr. Carlock, suggested that she learn more about the way they work and why, in particular, they may have a relaxing effect on her. This unwittingly led to a successful career in which she designs livestock handling systems for major ranches and meat companies all over the world. Grandin believes (1988, p. 6) that "a fixation is an interest in something external that should be directed and used to motivate." Other high-functioning autistic persons have echoed her sentiments ((Simons, 1974; Bemporad, 1979). Thus, she suggests that fixations be directly incorporated into the curriculum (1988, pp. 5-6):

> Another of my fixations was automatic sliding doors in supermarkets and airports. A teacher might wonder, "how can I use math, science, and English in a door fixation?" At the elementary level, tasks could be simple, such as requesting the door company to send its catalog. Adults might think such a catalog boring, but the autistic child with a door fixation would find it fascinating. Math and geography could be involved by asking the child to find the door company on a map and measure the miles to it from the school.

Many higher functioning autistic individuals are gifted and have talents which include: unusually well-developed memory skills (i.e., map memorizing, repeating newspaper contents verbatim); phonologically accurate word decoding; extremely fast calculation (i.e., calendar calculation) and mathematical ability; artistic talents; and, musical skills (Tsai, 1992). If identified and made known to educational personnel, gifts such as these can be tapped so as to help a child integrate more smoothly into the group. For example, the student can become the designated classroom "expert" in an area of fixation or talent which may also become the focal point of assignments and projects.

General Educational Issues. It is often quite difficult to assess overall intellectual potential of higher functioning autistic children prior to adolescence. This is due, in part, to

the significant language communication deficits which characterize this syndrome. Autistic children often perform poorly on tasks that are language based. Since directions are often delivered verbally, performance on visual spatial tasks may also suffer even though this is usually an area of strength. It is possible to address this issue by using nonverbal tasks with accompanying demonstration.

Many autistic children also find it difficult to perform on demand. Normally capable of executing certain tasks within a familiar situation, a new setting may prove so overstimulating that the ability to generalize a skill is affected. It may be of help, therefore, to introduce new situations gradually. At times, it may also be appropriate to instruct a parent or teacher as to how to administer a test.

Distractibility is also an issue in assessment which may contribute to erratic performance. This will be addressed in greater detail below.

Behavioral oddities, in combination with the above educational issues, could lead to confusion regarding a youngster's actual ability and, in turn, what should be expected of that child in the classroom. In our clinical work, we have found two factors which may identify higher functioning children. The first is on grade level achievement in most skill areas (i.e., with the exception of reading comprehension). The other is a sense of humor (i.e., which may be absent during the early childhood years but could surface by the age of approximately 8 years of age). Autistic children who exhibit a sense of humor are often higher functioning than those who do not (i.e., if one "controls" for individual personality styles). It is noteworthy, however, that this has not consistently been our observation in the case of children having Asperger's Syndrome (i.e., many of these individuals, although higher-functioning in terms of test performance, may not exhibit a sense of humor).

Although we are uncertain as to the possible causal factors underlying the clinical correlation between higher-functioning autism and sense of humor, several hypotheses seem plausible. One is that in order to create or comprehend humor, one must be tuned into subtle nonverbal cues such as voice inflections in teasing and facial expressions to a certain extent. Another relevant factor is that aspects of humor often draw upon one's experience, to abstract and to generalize.

Even though a child's level of overall functioning may be high, however, he or she is

still likely to require individual remedial attention when new lessons are presented as previously mentioned. In general, tasks should be sub-divided into small, component parts and carefully sequenced. Time for practice then becomes critical.

Medications. For many higher functioning autistic individuals, stimulants or anti-depressants may be of benefit at some time in addressing obstacles to learning. Stimulants such as methylphenidate and dextroamphetamine have been successfully used to manage distractibility and improve the concentration of school aged autistic children. Anti-depressant medications have been used successfully to manage anxiety in adults (Gray, 1993).

Case Examples

By this point, we hope to have clearly illustrated that, despite its low prevalence, autism is a condition about which much is known. In addition, there is a body of knowledge available that directly addresses educational issues as they pertain to higher functioning autistic spectrum children. In the United States, however, this information has been slow to reach the general educational community. More often than not, when families are referred to our clinic for independent consultation, we find that schools **are not** dealing with these children in a knowledgeable manner. Moreover, we find that when school personnel **do** understand the issues involved, a child's individualized educational plan is usually formulated more appropriately thus increasing its efficacy. In order to demonstrate this point, two actual case examples are provided.

"Ricky". Ricky was the product of a normal pregnancy and a somewhat complicated delivery. He was a big baby who was in the birth canal for approximately 30 to 45 minutes, and he was born blue. Developmental milestones ranged from normal to late. He walked unassisted by the age of 13 months and was toilet trained by the age of 3 years. He spoke his first words at the age of 2 and 1/2 years but did not begin speaking in 2 to 3 word phrases until the age of 4 years. In addition to his language difficulties, Ricky's behavior was also difficult to manage during his early childhood years. His parents reported that he tended to be very rigid, to become overstimulated very easily and to have difficulty dealing with any type of transition.

When Ricky was 3 and 1/2 years old, they consulted with a pediatric neurologist

about their concerns. He was diagnosed as having a mixed receptive/expressive language disorder with abnormalities of sociability. The physician's impression was that Ricky's profile was consistent with a mild to moderate pervasive developmental delay, a neurologically based autistic spectrum disorder. Prognostically, it was felt that Ricky had promising intellectual strengths in visual spatial areas.

Educationally, Ricky attended a special education preschool program for language impaired children. When he was 6 years old, he was transferred to a self-contained class in a public elementary school where he was classified as "speech impaired". He spent his second and third grade years in a self-contained classroom of 11 children. Approximately one half of the students were language impaired and the other half had a variety of learning difficulties. According to the teacher, one other child in the class had a pervasive developmental delay as well. In addition to Ricky's special class placement, he also received pull out language intervention twice per week. The intervention was administered in a small group (i.e., 4 to 6 children) and focused on language pragmatics as well as reinforcement of critical thinking abilities.

Ricky's third grade teacher expressed concerns to his parents about his progress. She stated that she often had the sense that Ricky may be more capable than his actual performance suggested most of the time. He frequently had difficulty focusing and sustaining his attention and required continual cuing. Further, Ricky often seemed reluctant to attempt new things that were being taught. For example, she stated that with arithmetic, he resisted re-grouping for several weeks despite her impression that he was cognitively able to grasp the concept. When the teacher provided Ricky with additional structure and went over the concept with him one-to-one, he was able to grasp it readily.

In view of some of Ricky's underlying strengths, his teacher wondered whether there were more effective ways in which to teach him so as to help him realize his potential. She also wondered whether there were ways in which to help Ricky become a more effective communicator within the classroom. Although he was able to initiate interaction with some of his classmates, he did not seem to know how to sustain an interaction.

The teacher's concerns followed from a genuine desire to help him realize his potential. They echoed those of Ricky's parents. His parents had observed that Ricky's

academic skills were lagging considerably. In addition, they felt that Ricky did not know how to use language in order to get his basic needs met. Because of their continuing concerns, Ricky's parents decided to consult with a pediatric psychiatrist; it was the psychiatrist who referred Ricky for a comprehensive neuropsychological evaluation.

An observation of Ricky in his school setting indicated a child who seemed to feel comfortable within his environment. Significant weaknesses in communication skills and distractibility were noted in his self-contained classroom as well as in his smaller language skills group.

Ricky presented as an effervescent, engaging and emotionally well-adjusted boy with apparent signs of autism. His sense of relatedness was odd and his communication behavior was characterized by a constant stream of overlearned or "scripted" expressions (i.e., rote repetition of television commercials, etc). Nonetheless, he exhibited a good sense of humor and a spirited playfulness.

On most tasks, Ricky's performance was erratic and he had significant difficulty sustaining his attention. In 7 hours of testing, his overall profile reflected a pattern of visual spatial strengths and verbal, language based weaknesses. On the Wechsler Intelligence Scale for Children-Third Edition (WISC-III), he earned a Verbal IQ of 63 and a Performance IQ of 81. Clinical impression, based on his subtest scatter (i.e., see Appendix A) was that Ricky's visual spatial abilities were functionally stronger than his scores suggested since distractibility seemed to compromise his performance in numerous instances. Regarding academics, Ricky's scores were significantly below grade level in all areas examined (i.e., ranging from a kindergarten to a first grade level in areas of decoding, math and spelling). Based on working with Ricky, clinical impression corroborated that of his teacher's impression--that he had the ability to achieve at a higher level than that at which he was performing.

In reviewing the teacher's initial concerns, Ricky's academic difficulties were fairly predictable given his autism/pervasive developmental delay diagnosis. Her questions reflected a general lack of appropriate knowledge and training among school staff. In order to address this situation, the recommendation was made that his parents request a meeting at his school in order to explore changes in his program.

The initial meeting took place at Ricky's school; it was attended by school personnel

and facilitated by the school psychologist. The first issue addressed was that of classification. Despite Ricky's previous diagnosis of autism/pervasive developmental delay, his school had classified him as "speech impaired". This was a bit perplexing in that Ricky's presentation was classic of a higher functioning autistic child and he clearly demonstrated the "triad" of traits.

Further, in order to enhance Ricky's educational program, the following additional requests were made by his parents: (1) an occupational therapy evaluation in order to assess fine motor weaknesses; (2) a physical therapy evaluation in order to determine whether there was a need for adaptive physical education services; (3) a comprehensive speech and language evaluation to assess his current needs; (4) an aide to work with Ricky one-to-one in the classroom; (5) classroom instruction in social pragmatic skills; (6) access to appropriate assistive technologies; (7) summer educational support; (8) a better coordinated system of communication between school and home; and, (9) that all staff working with Ricky have some background in autistic spectrum disorders. In addition, a recommendation was made to the referring psychiatrist that a trial of medication be explored in the management of Ricky's attentional weaknesses.

Although in agreement that these issues should be explored further, the staff on hand at the meeting did not feel that they had authority to grant any of these requests. They stated that Ricky's parents would have to put in a request for a "central administration" meeting.

At the Committee on Special Education (C.S.E.) "central" meeting, which occurred approximately one month later, the session was facilitated by a psychologist designated by the Committee. In addition to one of the authors, the psychiatrist who had referred Ricky was also present. Despite our corroborating impressions, as well as those of the neurologist who had seen Ricky earlier in childhood, the special education administrator refused to change Ricky's classification at this meeting because he was not sure that it was appropriate.

Further, it appeared evident that this administrator, well meaning though he may have been, had little direct experience with or knowledge of autistic children. In considering the request to change the classification, he employed a "cookbook" approach and referred to a handbook issued by the State of New York which outlined approved handicapping conditions. This handbook defines autism as (NY State Education Department, 1995, p. 17):

> ...a behaviorally defined syndrome which may occur in children of all levels of intelligence. There is usually difficulty in responding to people, events and objects. Responses to sensations of light, sound and feeling may be exaggerated and delayed speech and language skills may be demonstrated. These difficulties are usually observed before two and one-half years of age.

Even as he read a list of traits which clearly applied to Ricky, he seemed unable to apply that which he was reading to this actual child.

School personnel refused to grant any of the additional requests made by Ricky's parents at this meeting as well and stated that a follow-up meeting would have to be scheduled. In the interim, it was recommended to the family that they use a method that had been devised by another family with whom we had worked. This method entailed compiling a written packet containing copies of relevant professionals' reports as well as requests specifically detailed and documented in writing. The family did so and brought it with them to the next meeting.

During the second meeting, at which neither author was in attendance, virtually all of the family's requests were granted with the exception of summer educational help (i.e., the Committee deemed Ricky ineligible for a 12 month program). Although it was not explicitly stated, it appeared likely that school administrators had consulted with appropriate educational and legal personnel and had probably been advised that this family was, for the most part, making requests that were reasonable as provided for by the law given Ricky's autistic spectrum disorder.

Recently, at one year follow up, Ricky's mother reported that he had made "tremendous progress." The family had opted to explore a trial of the stimulant Ritalin to which Ricky had a positive effect; his distractibility had been minimized.

Within his self-contained classroom, he had been assigned to a teacher who had some familiarity with the T.E.A.C.C.H. program. In addition, he was granted a part time aide. Ricky's academic skills seemed to improve under these conditions. His mother reported that his reading skills had progressed a year and he is now able to read stories. Through occupational therapy intervention, Ricky's fine motor and graphomotor skills had been strengthened.

Socially, Ricky's communication skills are still lagging--particularly with regard to pragmatics. His mother did feel, however, that he was better able to integrate into his classroom socially this year than he had been last year. Earlier on the day we spoke, Ricky's parents had signed his I.E.P. for next year which would continue his current program.

It appears as though Ricky's needs have been met more effectively in the past year than they had been prior to that due to the changes made in his educational program. As he is about to enter the 5th grade, it seems likely that his middle school program may be more appropriate for him than his early elementary program was. On this basis, one could conclude that the system, as it stands, worked effectively in that Ricky's unmet needs were able to be identified and his program modified.

Nonetheless, it seems important to acknowledge several issues. First, Ricky certainly derived some benefit from his second and third grade years in public school. It is possible, however, that his skills may have been better developed had his original program been more appropriately tailored to his needs.

Second, Ricky's parents, who tend to be gentle and not aggressive by nature, were burdened with the financial and emotional stress of having to procure two independent evaluations. As working parents, each also lost valuable time from their jobs in order to attend **three** rather unpleasant meetings with school personnel, some of whom reacted to them as though their requests verged on the ridiculous. The school's ultimate re-consideration and granting of these requests suggests that they were reasonable ones.

In addition to the financial burden that Ricky's family had to bear, one might observe that the school system used its resources unwisely. Had staff been appropriately trained and knowledgeable, it is possible that none of these meetings may have had to occur in the first place. At the regular annual review meeting, modifications could have been made swiftly and amicably depending upon Ricky's progress in the past year. Time and resources could have been spent as allegedly intended--in educating the child rather than educating the staff and navigating an unfriendly bureaucracy.

"Steven". Steven was referred by his parents at the age 6 years 4 months. Relevant developmental history includes the following: He was the product of a mildly complicated

pregnancy and delivery. Steven's mother reported some early contractions during her pregnancy. He was delivered via Caesarian section due to bleeding his mother was experiencing and placed in an incubator for several hours following his birth. Motor milestones were achieved within normal limits. Steven walked unassisted by the age of 11 months and was toilet trained by the age of 2 years. Specific language milestones could not be recalled, but there had never been any reason to suspect that they were out of the norm.

From birth, Steven's mother reported him to be unique in several ways. He had the tendency to chew things, such as the varnish off his crib and the car upholstery. He had difficulty adjusting to transitions and was also described as being less affectionate than his siblings. He demonstrated little spontaneous affection and tended not be very responsive when physical gestures of affection were made toward him. When hugged, he remained stiff rather than 'falling into it'.

At the time Steven was referred, he was a first grader in a mainstream classroom at a public elementary school. His teacher expressed concerns to his parents about his behavior. She stated that he had difficulty paying attention and following through on tasks he was assigned. In addition, he sometimes misbehaved. On infrequent occasions, he had flipped pencils at other children and at one time even spit at another child.

Academically, Steven was reportedly acquiring basic skills at expected rates. He had trouble working independently and required nightly help with homework from his parents. Some of Steven's behavioral difficulties led teachers to wonder whether he might have a learning problem. His parents sought a comprehensive neuropsychological evaluation in order to gain insight into his cognitive profile.

During the evaluation, Steven was a cooperative boy whose social development was lagging significantly for a child of his age. Poorly related, he never really used age appropriate greetings nor was he able to make socially appropriate conversation.

In addition to his unusual relatedness, Steven demonstrated a number of signs suggestive of an underlying neurological impairment. When entering or leaving the office, he walked with hunched shoulders and exhibited an unconventional gait. Also, he spoke in a high, strained voice while gnashing his teeth and often gulped audibly. Steven also demonstrated a generalized motoric response at times, i.e., his head and trunk seemed to

move involuntarily when he moved his arms. This type of response is typical in younger children but usually resolves with maturity by the age of 6 years. The quality of Steven's attention was also somewhat unusual. He exhibited a drifty, "spacey" quality when not directly engaged.

Cognitively, Steven's profile was characterized by numerous areas of strength (See Appendix B). On the WISC-III, he earned a Verbal IQ of 107, Performance IQ of 94 and a Full Scale IQ of 101. In addition, he scored in the superior range on a nonverbal task of novel problem solving. Weaknesses were noted in areas of expressive and receptive language, auditory recall for verbally loaded information, fine, gross and graphomotor control. Academically, Steven achieved on expected grade levels in most isolated skill areas including word attack skills, sight word recognition, spelling and computational math. His accuracy and rate of decoding in context, however, were lagging and fell within low-average to borderline deficient ranges.

Clinical impression was that the most striking aspect of Steven's presentation was his unusual sense of social relatedness--which, according to his parents' reports--had been present since he was a child. In addition to his impaired relatedness, he also had weaknesses in his pragmatic use of language, graphomotor skills, trouble orienting to task at times, limited ability to cope with tasks he found challenging, and a slow speed of information processing. His impaired social relatedness with relatively intact cognitive functioning was suggestive of Asperger's Syndrome; Steven was referreded to a pediatric neurologist who confirmed this diagnosis.

After confirmation of the diagnosis, it was recommended that Steven's parents request a pupil personnel team meeting in order to share these findings as well as to explore what type of modifications the school system could make in Steven's program given his special needs. Similar to Ricky's case, Steven's parents also put together a packet including appropriate professionals' reports along with requests for the following services: a full time aide; language therapy three times weekly in collaboration with the classroom teacher; occupational therapy twice weekly to improve Steven's fine motor and graphomotor skills; physical therapy once a week and adaptive physical education to improve Steven's gross motor coordination and gait; and, an appropriate summer program.

The Assistant Director of Special Education facilitated the first meeting. This person's original training had been in the field of speech pathology. Also present were Steven's teacher, a resource room teacher, speech/language specialist, school psychologist, parent advocate, Steven's mother and one of the authors. The facilitator had apparently read the diagnostic report prior to the meeting. Upon the table before her sat a thick packet of materials bearing the name of the Autism Society of America.

The facilitator began the meeting by reviewing the procedures. She then summarized the report and made some general statements to her staff about the needs of children having autistic spectrum disorders. Among these, she emphasized structure and language pragmatics. She then asked that the diagnostic report be reviewed in greater detail along with the requests being made. A dialogue ensued during which possible modifications and scheduling issues were discussed. When staff had questions that related to the nature of Asperger's Syndrome, the facilitator answered them effectively and knowledgeably. Several requests, such as summer intervention and the hiring of a consultant had to be explored further; thus, a second meeting had to be scheduled for three weeks later.

At the second meeting, an individualized educational plan was set in place that incorporated all of the services requested except for summer educational intervention. This was deemed inappropriate since most of Steven's skills were on grade level.

At one year follow up, Steven's mother reported that he had made a "dramatic improvement". In the past year, he was able to master a full second grade curriculum without academic modifications. Aspects of his communication skills have also improved. According to his mother, Steven currently speaks in his natural voice 75% of the time and establishes eye contact; he is still reluctant, however, to use the telephone. Socially, Steven's mother happily reported that he has made friends in the past year and verbalizes more frequently and appropriately in the classroom. Regarding his motor skills, Steven currently walks with a normal gait most of the time.

Due to the success of Steven's second grade program, his parents recently signed an I.E.P. for third grade in which his services will be cut considerably. Physical and occupational therapy services will be eliminated. His aide will be cut back from a full day to three hours a day. In addition, the school which Steven attends hopes to open an intensive

support center to serve the needs of autistic children who are mainstreamed this coming fall.

Due largely to the facilitator's expertise in the area of autistic spectrum disorders, Steven's program was arranged in a swift and amicable manner. In addition, Steven was classified correctly and sound teaching principles, based on a foundation of appropriate knowledge, were incorporated into his program from the beginning. During the two meetings held, essential scheduling and policy issues were discussed; the tone was professional and cordial. In attending these meetings, one came away with the impression that the time was used efficiently.

These two case examples serve to illustrate the very different experiences of two families with autistic spectrum children enrolled in elementary schools in the United States. When the facilitating administrator involved was knowledgeable concerning autistic spectrum disorders, this knowledge was promptly related to other school personnel; an effective plan was drawn up amicably and in a time efficient manner. When the facilitating administrator did not appear to have a suitable knowledge base concerning autistic spectrum disorders, parents were placed in somewhat of an adversarial position. In addition, the initial classification of the child was inappropriate and the individualized educational plan that was in effect for two years may not have been the most effective. The formulation of a new and more effective plan was both time and energy consuming and not particularly cost effective for either the school system or the family.

Recommendations

In order to meet the needs of higher functioning autistic spectrum students more effectively, the following measures are recommended. First, if a child is diagnosed by a physician, this information should be shared promptly with school personnel via a formal school meeting. Because of the general usefulness of this diagnosis, parents should ensure that children are classified as having an autistic spectrum disorder. In addition, descriptive terms should more specifically spell out the child's level of educational functioning and need for remedial services.

Second, prior to the occurrence of a school meeting, families must provide school administrators and teachers with appropriate information about autism and the education of

higher functioning autistic spectrum students; parents should not assume that school administrators will be familiar with this information. Much useful information can be obtained at minimal cost through the Autism Society of America or through the T.E.A.C.C.H. program based at the University of North Carolina at Chapel Hill.

Third, parents have a right to demand that all school personnel who will be working with their child must familiarize themselves with these materials **prior** to having contact with the child whenever reasonably possible. This provision should be written explicitly into the individualized educational plan. If teachers, etc., have questions regarding the education of autistic students that cannot be answered by an appropriate school administrator, then it is the school's responsibility to hire a consultant who has appropriate expertise.

Fourth, teacher training should be expanded to include some familiarity with all disabling conditions as set forth in the I.D.E.A. With the thrust toward inclusionary practices, mainstream teachers are confronted with growing numbers of children with special needs in their classrooms.

Fifth, for teachers who are already certified and employed, school systems need to mandate on-going in-service training that addresses all disabling conditions as set forth in the I.D.E.A. for the reasons stated above.

Concluding Remarks

In this piece, we have attempted to illustrate the dilemma of appropriate educational programming for higher functioning autistic spectrum students. Despite laws which entitle such students to effective programming, the low prevalence of autistic spectrum disorders makes it likely that many educators have little training and/or direct experience with these students. Thus, they are frequently classified incorrectly and their individualized educational programs are often not as effective as they could be. In addition, well-meaning but under-informed school personnel may inadvertently expose these children to situations that are more anxiety provoking than they need to be.

Nonetheless, there is a growing body of literature that addresses characteristics of higher functioning autistic students as well as appropriate educational practices to implement with them. When educational administrators and teachers are familiar with this information,

the formulation of effective educational plans tends to be addressed in an amicable, time and cost effective manner.

More far-reaching advocacy efforts on the part of knowledgeable professionals and families must be undertaken in order to ensure that the educational needs of all higher functioning autistic students are met effectively. As with all children, these students are entitled to be granted every opportunity possible in order to help them to realize their considerable potential.

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Name: Ricky
D.O.B. Age: 9-1
Grade: 3.7 Special Ed
Dates of Evaluation

TEST DATA SUMMARY SHEET

Wechsler Intelligence Scale for Children–III (WISC–III)

Information	2	Picture Completion	8
Similarities	5	Coding	4
Arithmetic	5	Picture Arrangement	11
Vocabulary	4	Block Design	10
Comprehension	1	Object Assembly	2
(Digit Span)	(4)	(Mazes)	(11)

VIQ=63 PIQ=81 FSIQ=N/A due to VIQ/PIQ split

Halstead–Reitan Neuropsychological Test Battery (Knights/Norwood norms)

Intermediate Booklet Category Test: 8th %ile (77 errors)

Trail Making A:	Speed:	1st %ile	Accuracy:	1st %ile
Trail Making B:	Speed:	1st %ile	Accuracy:	31st %ile

Harris Test of Lateral Dominance

100%	Right Handed	R	Foot preference
L	Monocular eye dominance	L	Binocular eye dominance

Rapidly Recurring Target Figures Test

Diamond subtest	Speed:	1st %ile	Accuracy:	95th %ile
592 subtest	Speed:	85th %ile	Accuracy:	1st %ile

Beery–Buktenica Developmental Test of Visual Motor Integration: 6th %ile Standard Score=77 Age Equivalent: 6–0

Purdue Pegboard Test: R=42nd %ile (13) L=98th %ile R/L=15th %ile (11)

Neurosensory Center Comprehensive Examination for Aphasia (NCCEA)

Sentence Repetition: 81st %ile

Visual Attention Span from Hiskey–Nebraska: 35th %ile

Hiskey–Nebraska Test of Learning Aptitude

	Mental Age		Mental Age
Bead Patterns:	7–6	Picture Identification:	5–6
Paper Folding:	7–0	Memory for Color	8–0
Picture Association:	4–6	Visual Attention Span:	10–0
Completion of Drawings:	6–6		

Appendix A

Test Data Summary Sheet – Ricky

Goldman–Fristoe–Woodcock Tests of Sound/Symbol Association

Sound Mimicry: 34th %ile
Sound Blending: Attempted

Wide Range Assessment of Memory and Learning (WRAML)

		Delay
Picture Memory:	5th %ile	
Design Memory:	– %ile	Attempted
Verbal Learning:	1st %ile	Atypical
Story Memory:	2nd %ile	Attempted
Finger Windows:	63rd %ile	
Sound–Symbol:	9th %ile	No Decay
Sentence Memory:	2nd %ile	
Story Memory Recognition:	Average	

Woodcock Reading Mastery Test–Revised

Word Attack: Attempted

Wide Range Achievement Test–III (WRAT–III)

Reading:	.8th %ile;	K grade equivalent;	
Spelling:	<1st %ile;	Pre–K grade equivalent;	
Arithmetic:	1st %ile;	1st grade equivalent;	Standard Score: 102

Sentence Completion Test: Administered

Projective Drawings: Administered

Parenting Stress Index: Administered

Name: Steven
D.O.B. Age: 6-4

Grade: 1.4
Dates of Evaluation

TEST DATA SUMMARY SHEET

Wechsler Intelligence Scale for Children–III (WISC–III)

Information	12	Picture Completion	6
Similarities	12	Coding	10
Arithmetic	12	Picture Arrangement	7
Vocabulary	14	Block Design	12
Comprehension	6	Object Assembly	7
(Digit Span)	(11)	(Mazes)	(13)

VIQ=107 PIQ=94 FSIQ=101

Children's Category Test

98th %ile; Standard Score=70

Harris Test of Lateral Dominance

70% Right Handed
L Monocular eye dominance
L Foot preference
L Binocular eye dominance

Rapidly Recurring Target Figures Test

Diamond subtest Speed: 62nd %ile Accuracy: 75th %ile592 subtest
Speed: 1st %ile Accuracy: 84th %ile

Beery–Buktenica Developmental Test of Visual Motor Integration

70th %ile; Standard Score=108; Age Equivalent: 6 years 11 months

Purdue Pegboard Test:

R=78th %ile (11) L=68th %ile (10) R/L=20th %ile (6)

Visual Sequential Memory from the ITPA:

84th %ile

Test of Problem Solving (TOPS)

	%ile	Standard Score
Explaining Inferences	7th	42
Determining Causes	12th	44
Negative Why Questions	51st	50
Determining Solutions	18th	46
Avoiding Problems	20th	45
Total	13th	44

Wide Range Assessment of Memory and Learning (WRAML)

		Delay
Picture Memory:	5th %ile	
Design Memory:	25th %ile	
Verbal Learning:	97th %ile	Low–Average
Story Memory:	9th %ile	Average
Finger Windows:	50th %ile	
Sound–Symbol:	37th %ile	Average
Sentence Memory:	50th %ile	
Story Memory Recognition:		High–Average

Woodcock Reading Mastery Test–Revised

Word Attack: 2.2 grade equivalent; 7–6 age equivalent

Wide Range Achievement Test–III (WRAT–III)

Reading:	81st %ile;	1st grade equivalent;	Standard Score: 113
Spelling:	93rd %ile;	1st grade equivalent;	Standard Score: 114
Arithmetic:	95th %ile;	2nd grade equivalent;	Standard Score: 125

Gray Oral Reading Test–3 (GORT–3)

Rate:	16th %ile;	<1.9 grade equivalent;	Standard Score: 7
Accuracy:	16th %ile;	<1.9 grade equivalent;	Standard Score: 7
Passage Score:	16th %ile;	<1.9 grade equivalent;	Standard Score: 7
Comprehension:	25th %ile;	<1.9 grade equivalent;	Standard Score: 8
(%ile	16th)		

(Oral Reading Quotient: 85)

Sentence Completion Test: Administered

Projective Drawings: Administered

Rorschach Inkblot Test (Exner) Scoring: Administered

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