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### Autistic Spectrum Disorder

Autism is a complex developmental disorder that typically appears within the first three years of a child's life. Presently, there is no medical test to determine whether a person has autism, and the diagnosis is indicated when an individual displays certain characteristic behaviors as defined by the Diagnostic and Statistic Manual, Fourth Edition. The individual must have a qualitative impairment with social interaction, as manifested by at least two of the following:

- marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction;
- failure to develop peer relationships appropriate to developmental level;
- a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people; or
- lack of social or emotional reciprocity.

Further, the individual must have a qualitative impairment in communication as manifested by at least one of the following:

- delay in, or total lack of, the development of spoken language;
- in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others;
- stereotyped and repetitive use of language or idiosyncratic language; or
- lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level.

Finally, the person must display restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least two of the following:

- encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus; or
- apparently inflexible adherence to specific, nonfunctional routines or rituals;
- stereotyped and repetitive motor mannerisms; or
- persistent preoccupation with parts of objects (American Psychiatric Association, 2000).

The daily functioning level of Autistic people varies to such a large extent that the disorder has recently been renamed Autistic Spectrum Disorder.

### Etiological Basis

Autism is a biological brain disorder that occurs in roughly 1 out of every 300 people in the United States (Megson, 1997). It is a disorder of the Nervous System and of the immune system that affects multiple metabolic pathways. It is possible that autism may be the result of a G-alpha protein disruption, which affects the retinoid receptors which modulate sensory input. It is also documented that many individuals with autism have highly abnormal lipid profiles (Megson, 1999). Autism is four times more prevalent in males than in females. Data of

autistic individuals suggest that autism may have a genetic component, on account of familial patterns of autism and related pervasive developmental disorders (PDD). Tuberous sclerosis is currently the second largest identifiable genetic cause of autism. Subsequently, the House of Representatives proposed a bill last month to increase awareness of tuberous sclerosis (Kelly, 2001).

A genetic component coupled with infant exposure to mercury may also contribute to the development of autism. Thimerosal, which contains mercury is an additive in vaccines used to prevent bacterial and fungal contamination. Recently, the FDA acknowledged that many children are exposed to more mercury in the first six months of their lives than is deemed "safe" (Steinberg, 2000).

Recently, a neurologist hypothesized that autism may be categorized into two distinct forms. The first form is an idiopathic autism, resulting from a familial connection. Under this subgroup, some autistic individuals also have other genetic disorders, such as Fragile X Syndrome, Landau- Kleffner Syndrome, William's Syndrome, or Tourette's Syndrome. The second form of autism is characterized by bilateral brain damage in early life, resulting in developmental delays in language, social skills, and organized purposeful activity. Approximately 25–30 percent of these people may develop a seizure pattern at some point during life (DeLong, 1999).

### **Defining Autism**

Autism is a spectrum disorder, meaning the symptoms and characteristics may present themselves in a wide variety of combinations, from mild to severe. Two children with the same diagnosis can act differently and can have varying skills. Some autistic children are remarkably gifted in specific areas. Evidence shows that early intervention results in positive outcomes for autistic children (Smith, 2001). With the appropriate specialized training, even persons with severe autism may be able to learn functional living skills, such as learning to cross the street safely; making a simple purchase; or asking for assistance when needed. Persons with mild forms of autism are able to live and to work independently in the community (Montgomery, 1995). The most important factor for any intervention program is its flexibility. In addition, most programs include some elements of communication therapy, social skill development, sensory integration therapy, and applied behavior analysis.

Types of treatment proven effective for autistic individuals include:

- Behavior modification;
- High doses of vitamin B6 and magnesium;
- DMG, folic acid, and other nutrients;
- Gluten or casein free diets;
- Music therapy; and
- Speech and language therapy.

Families are involved in certain stages of the treatment programs to assist them in dealing with the stresses of having autistic children and to better empathize with their children (Rimland, 2000).

### **Funding**

Annually, the United States spends \$13 billion in order to care for autistic children and adults (Montgomery, 1995). States are continuously attempting to develop effective criteria for special education funding formulas. The criteria for an effective formula is that it is understandable, equitable, adequate, predictable, flexible, responsible in reporting requirements, connectable to general education funding, acceptable politically, and accountable for outcomes (Parrish, 1995).

In 1990 in Vermont, Act 230 was implemented as the state's program for special education funding. This act allows for funds to be used on remedial and compensatory education and for the block grant to be based on the total student membership rather than on special education student counts. This removed incentives to identify students as "special ed" students, a label which carries negative stigma and may impact the children's social interactions, especially in rural areas. The Act appropriated 1% of the state special education money for in-service training grants to school districts. The Act also implemented a school-wide instructional service and

school-level instructional support team for identification of at-risk students. According to Act 230, reimbursement for additional special education staff is subject to annual approval and only a portion is reimbursed. The funding formula for Act 230 consists of (1) a mainstream block grant based on the total student enrollment in a district, which states that the local funds must equal 40% of the core service for special education; (2) extraordinary services reimbursed; and (3) intensive services reimbursement which must be annually approved (Montgomery, 1995).

Follow-up data four years after the implementation of Act 230 showed an increase in collaboration between regular and special educators, earlier intervention of at-risk children, more specialized training of individual aides, and less paperwork for teachers. Interviewed teachers stated that the system was now more placement neutral and more predictable. In addition, many teachers commented on the benefit of added resources that special education students brought to the classroom, such as computers and individual assistants. Teachers and families interviewed all stated that special education students educated in a regular classroom setting "clearly benefited" by receiving regular curriculum in a "real world" environment. However, in order for everyone to benefit, the class size must be small and no one child may monopolize the teacher's time. With the growth in the total student population and with subsequent budget cuts, the demands of teachers and the class size are increasing (Montgomery, 1995). Some autistic children may monopolize their teachers' time with their special demands and certain behavioristic habits. However, most autistic children are not a substantial time concern for the teachers.

With respect to other special education children, the average per pupil expenditure for special education programs for autistic children is the most expensive (Parrish, O'Reilly, Duenas, & Wolman, 1997).

### **Future Expectations**

Many population studies show an increase in the autistic portion of the population beyond what is expected based on the general population growth. One explanation may be that the higher levels of mercury in certain environments are causing autism in genetically predisposed children. However, another explanation is that the diagnostic criteria have changed, causing individuals who would have previously been labeled another form of developmentally delayed to be labeled autistic (Rapin, 1997). The criteria will continue to waver until a specific biological cause can be determined. The population data also shows that the individuals diagnosed as autistic today tend to have more mild symptoms and are more likely to be able to adopt to a regular lifestyle with a minor amount of intervention at an early age.

### **Sources**

- American Psychiatric Association. 2000. *Diagnostic and Statistical Manual of Mental Disorders, DSM-IV-TR* (Text Revised).
- DeLong, G.R. 1999. "Autism: New Data Suggest a New Hypothesis," *Neurology* (52), p.911- 916, 1999.
- Kelly, S. W., The Honorable. 2001. "H.CON.RES. 25: Expressing the sense of the Congress regarding tuberous sclerosis," February 8, 2001.
- Megson, M. 1999. "Is Autism a G-Alpha Protein Defect Reversible With Natural Vitamin A?" Autism Research Institute. <http://www.autism.com/ari/megson.html>
- Montgomery, D.L. 1995. "State Analysis Series: A Profile of Special Education Finance Reform in Vermont." American Institutes for Research.
- Parrish, T. 1995. "Criteria for Effective Special Education Funding Formulas." ERIC Database. <http://erica.net/ericdb/ED381934.htm>
- Parrish, T.; O'Reilly, F.; Duenas, I.; Wolman, J. 1997. "State Special Education Finance Systems, 1994-1995," American Institutes for Research. [http://csef\\_air.org/analysis\\_downloads.html](http://csef_air.org/analysis_downloads.html)

Rapin, I. 1997. "Autism." *New England Journal of Medicine* (337), p.97- 104.

Rimland, B. 2000. "Letter to Friends of ARI, December 2000," Autism Research Institute.  
<http://www.autism.com/ari.yearend.html>

Smith, C.H., The Honorable. 2001. "Recognizing the Importance of Increasing Awareness of Autism Spectrum Disorder," March 29, 2001.

Steinberg, A.E. 2000. "Thimerosal (Mercury) Induced Autism Litigation: Causal Link Between Thimerosal and Autism," The Steinberg Law Firm, P.C.. <http://www.vaccineinjury.com>

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