



working with children who stutter. The speech-language pathologist will talk to you as a parent or caregiver to obtain the necessary background information and will conduct a thorough evaluation of your child's speech to determine whether developmental stuttering is present.

Where Can I Find More Information?

■ On Tourette's Syndrome

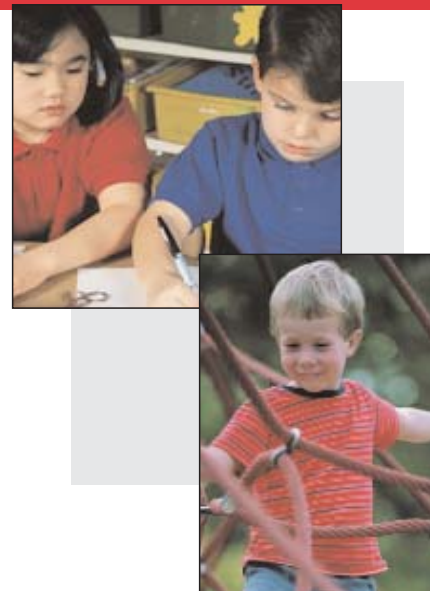
- *A Mind of Its Own. Tourette's Syndrome: A story and guide* by Ruth Bruun and Berel Bruun. Published by Oxford University Press (1994). This is a wonderfully written book on Tourette's Syndrome and how it affects people and their environment.
- *Children with Tourette Syndrome: A Parent's Guide* by Tracy Haesle. Published by Woodbine House (1992). This is a practical manual written specifically for parents.
- *Understanding Tourette Syndrome: A Handbook for Educators* published by The Tourette Syndrome Foundation of Canada (www.tourette.ca). This book provides lots of information and many practical tips useful for educators, speech-language pathologists and other service providers.
- The Tourette Syndrome Association (www.tsa-usa.org) is an international organization which supports and organizes educational initiatives and symposia and provides financial support for research into this disorder. The association provides information to help increase public awareness and support to people with TS.



- The National Institute of Neurological Disorders and Stroke web site has information, research and links (www.ninds.nih.gov/index.htm).

■ On Stuttering

- The Stuttering Foundation of America has a wealth of resources for those who stutter and their families. The SFA's web sites (www.stutteringhelp.org and www.tartamudez.org) contain a referral list by geographic location of clinicians who specialize in stuttering. The web site also lists public libraries that have Stuttering Foundation materials that can be checked out for free.
- Additionally, the Foundation publishes brochures, books and videotapes on stuttering for families and professionals. The complete catalog may be found at the OnLine Store at www.stutteringhelp.org
- *If You Think Your Child Is Stuttering* is an excellent brochure with basic information for parents and 9 simple tips for talking to your child. Available in English and Spanish, it may be downloaded online for free, or call The Stuttering Foundation's toll-free helpline at 1-800-992-9392.



Stuttering and Tourette's Syndrome

The Stuttering Foundation is a tax-exempt organization under section 501(c)(3) of the Internal Revenue Code. Charitable contributions are tax deductible, and help us continue our work.



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www.stutteringhelp.org www.tartamudez.org

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Stuttering and Tourette's Syndrome

What is Tourette's Syndrome?

Tourette's Syndrome (TS) was first described in 1885 as a separate disease by the French physician, Dr. Georges Gilles de la Tourette. One of the main characteristics is the presence of multiple motor and vocal tics. Tics are involuntary, sudden, rapid, brief repetitive stereotyped movements or vocalizations. Tics can be "simple", involving individual muscle groups (e.g., eye blinks, head twitches), or "complex" consisting of coordinated patterns of movements (e.g., jumping, complex facial movements.) Vocal tics can consist of simple sounds such as throat clearing, sniffing, and more complex sounds such as words, phrases or even complete sentences. One particular vocal tic often associated with TS is coprolalia (socially unacceptable utterances). Actually, coprolalia only occurs in a minority of cases and is often only temporarily present. No two persons with TS display precisely the same tic characteristics.

Diagnostic criteria include: onset before age 18, the presence of tics for more than one year, a variable frequency and anatomical distribution of tics, a gradual replacement of old symptoms with newer ones, and the absence of other medical explanations for the presence of the tics. Tics tend to increase during periods of emotional arousal and decrease during intense concentration on a given task.

Tourette's Syndrome affects approximately .5 to 3 people in 1000. Just as in stuttering, TS is more common in males than females (4:1). The mean age of onset is 6 years old with very few onsets beyond the age of 13. In up to 70 percent of children with TS the tics will significantly diminish or disappear by late adolescence.

This material was compiled by Luc De Nil, Ph.D., Chair of the Graduate Department of Speech-Language Pathology, University of Toronto, and by Paul Sandor, M.D., Director of the Tourette's Syndrome Clinic, University Health Network.

What Causes Tourette's Syndrome?

Results from twin and family studies have shown convincingly that TS has a strong genetic component. For twins that share the same genetic material, the likelihood of TS occurring in both twins is between 53 and 77 percent. Family studies have demonstrated that the rate among relatives ranges from 9.8 to 15 percent. It is thought that TS is associated with the mutation in one major gene modified by several minor genes.

Additionally, most scientists believe that TS is associated with a deficit in a circuitry in the brain that links regions in the cortex with areas deep in the brain. These connections play an important role in the control and coordination of motor behavior. It is thought that dopamine, an important neurotransmitter, is excessively active in patients with TS, because medications blocking Dopamine receptors tend to reduce the severity of tics.

Speech and Language Characteristics of People with Tourette's Syndrome

Research generally has indicated that children or adults with TS do **not** have a general language problem, but that they experience disruptions of speech production. These difficulties also have not been found to be related to the severity of vocal tics and as such do not appear to have a common cause.

Stuttering and Tourette's Syndrome

A number of people have suggested that children with Tourette's Syndrome may have a higher frequency of stuttering than seen in the general population. This has raised the possibility of a causal link between the two disorders, especially because there have been some suggestions that children and adults who stutter may have atypical functioning of a deep part of the brain, called the basal ganglia, which is an important control center for movements.

The literature reports incidence of stuttering in Tourette's Syndrome ranging from 7 percent to as high as 33 percent. Much of this research, however, was not based on systematic observations on larger groups of

children or adults. Recent systematic analysis of speech disfluencies has indicated that children with TS indeed are much more disfluent than non-affected children, but that these disfluencies are more similar to so-called normal disfluencies. Unlike children with developmental stuttering, disfluencies such as part-word repetitions, prolongations and blocks do **not** appear to be a common characteristic of the speech of children with Tourette's Syndrome.



What To Do?

While there may not be a direct link between Tourette's Syndrome and stuttering, the two problems often occur together.

■ **When you think your child has TS**

Often the first symptoms of TS are facial tics, such as rapid eye blinks or twitching movements around the mouth. Frequent throat clearing or sniffing sounds also often appear early. If you think your child has such symptoms, you should make an appointment with your family physician or a neurologist for a thorough assessment. Keep in mind that there are no laboratory tests that can determine if someone has TS, hence the opinion of a clinician experienced in managing patients with TS is the only way to confirm the diagnosis. If necessary, TS can be treated effectively with medication, behavioral management and proper counseling.

■ **When you think your child is stuttering**

Many children with TS have frequent disfluencies in their speech. Sometimes their vocal tics may resemble speech behaviors often seen in stuttering. If you have questions about whether or not your child stutters, you should make an appointment with a speech-language pathologist who has experience in

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