

# NASET Lesser Known Disorders in Special Education Series

## Issue # 26 – February 2012

### Lesser Known Disorders

Each issue of this series contains at least three lesser known disorders. Some of these disorders may contain subtypes which will also be presented. You will also notice that each disorder has a code. These codes represent the coding system for all disabilities and disorders listed in the [Educator's Diagnostic Manual \(EDM\)](#) Wiley Publications.

### Disorders in this issue:

- [LD 2.04-Developmental Anarithmetria \(Incorrect Operation Dyscalculia\)](#)
- [SL 5.00-Voice Disorders \(Dysphonia\)](#)
- [VI 2.01-Bietti's Crystalline Dystrophy](#)

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## LD 2.04-Developmental Anarithmetria (Incorrect Operation Dyscalculia)

**Disability Category: Learning Disabilities**

### Definition

A type of dyscalculia specifically associated with difficulties and confusion in performing the correct arithmetic operations (e.g., although addition of numbers was required for a problem, a student subtracted the numbers instead; or multiplying two numbers when division is what was required) (Yisrael, 2000).

### Explanation

Students with Developmental Anarithmetria (Incorrect Operation Dyscalculia) will use the incorrect operations when performing math problems. For example, the student states that  $5 + 2 = 3$ . Here, the student performed the operation of subtraction instead of addition. Another example would be the student who states that  $30 \times 5 = 6$ . Again, an incorrect operation is performed (the student divided 30 by 5 instead of multiplying the numbers).

## SL 5.00-Voice Disorders (Dysphonia)

### Disability Category: Speech and Language Impairment

#### Definition

Voice (or vocalization) is the audible sound produced by passage of air through the larynx (Melfi & Garrison, 2004). Voice is not always produced as speech, however. Infants babble and coo; animals bark, moo, whinny, growl, and meow; and adult humans laugh, sing, and cry. Voice is generated by airflow from the lungs as the vocal folds are brought close together.

When air is pushed past the vocal folds with sufficient pressure, the vocal folds vibrate. If the vocal folds in the larynx did not vibrate normally, speech could only be produced as a whisper. An individual's voice is as unique as your fingerprint. It helps define one's personality, mood, and health (National Institute on Deafness and Other Communication Disorders, 2002f).

Voice disorders are a group of problems involving abnormal pitch, loudness, or quality of the sound produced by the larynx (voice box). (University of Virginia, 2004). Approximately 7.5 million people in the United States have trouble using their voices. Disorders of the voice involve problems with pitch, loudness, and quality. Pitch is the highness or lowness of a sound based on the frequency of the sound waves. Loudness is the perceived volume (or amplitude) of the sound, while quality refers to the character or distinctive attributes of a sound. Many people who have normal speaking skills have great difficulty communicating when their vocal apparatus fails. This can occur if the nerves controlling the larynx are impaired because of an accident, a surgical procedure, a viral infection, or cancer (National Institute on Deafness and Other Communication Disorders, 2002f).

Many people who have acquired normal speaking skills become communicatively impaired when their vocal apparatus fails. This can occur if the nerves controlling the functions of the larynx are impaired as a result of an accident, a surgical procedure, or a viral infection (Psychology Today, 2005).

#### Diagnostic Symptoms

Common symptoms of a voice disorder include (Lahey Clinic Foundation, 2005; Psychology Today, 2005):

- Breathy vocal quality
- Chronic cough or excessive throat clearing
- Decreased breath support during speech
- Deviations in the loudness of voice
- Diplophonic (double-toned) quality
- Hoarseness
- Inability to speak loudly
- Loss of voice
- Quality deviations
- Reduced pitch range or sudden change in overall pitch –Pitch deviations
- Sudden or gradual change in overall vocal quality
- Tremulous quality in the voice
- Vocal strain or fatigue

## Further Key Points

A voice is termed "disordered" when the vocal quality of an individual is altered/changed in such a way that it is thought to be abnormal to the listener. The onset and development of these disorders can be "sudden" or "slow." Examples of characteristics of sudden onset may be: trauma, infection, CVA, injurious inhalation, intubation, conversion reaction, or a severe allergic reaction. Degenerative neurologic disease, musculo-skeletal tension, vocal abuse and misuse, growths of folds, gastro-esophageal reflux, and chronic allergies may characterize slow onset (Murray State University, 2005).

Researchers suggest that there are two specific categories of voice disorders: (1) Functional Voice Disorders and (2) Organic Voice Disorders. Organic voice disorders are those disorders that do have a known cause. Functional disorders encompass all disorders that result in physical change, but do not have a known cause (Murray State University, 2005)

In sum, voice typically is defined by the elements of pitch (frequency), loudness (intensity), and quality (complexity). By varying the pitch, loudness, rate, and rhythm of voice (prosody), the speaker can convey additional meaning and emotion to words. A voice disorder exists when the quality, pitch, or volume differs from that of other persons of similar age, culture, and geographic location (Melfi & Garrison, 2004).

## VI 2.01-Bietti's Crystalline Dystrophy

### Disability Category: Visual Impairment

### Definition

Bietti's crystalline dystrophy (BCD) is an inherited eye disease. (National Eye Institute, 2005e)

### Explanation

Bietti's crystalline dystrophy (BCD) named for Dr. G. B. Bietti, an Italian ophthalmologist, who described three patients with similar symptoms in 1937. The symptoms of BCD include: crystals in the cornea (the clear covering of the eye); yellow, shiny deposits on the retina; and progressive atrophy of the retina, choriocapillaries and choroid (the back layers of the eye). This tends to lead to progressive night blindness and visual field constriction. BCD is a rare disease and appears to be more common in people with Asian ancestry.

People with BCD have crystals in some of their white blood cells (lymphocytes) that can be seen by using an electron microscope. Researchers have been unable to determine exactly what substance makes up these crystalline deposits. Their presence does not appear to harm the patient in any other way except to affect vision.

From family studies, we know that BCD is inherited primarily in an autosomal recessive fashion. This means that an affected person receives one nonworking gene from each of his or her parents. A person who inherits a nonworking gene from only one parent will be a carrier, but will not develop the disease. A person with BCD syndrome will pass on one gene to each of his or her children. However, unless the person has children with another carrier of BCD genes, the individual's children are not at risk for developing the disease (National Eye Institute, 2005e).